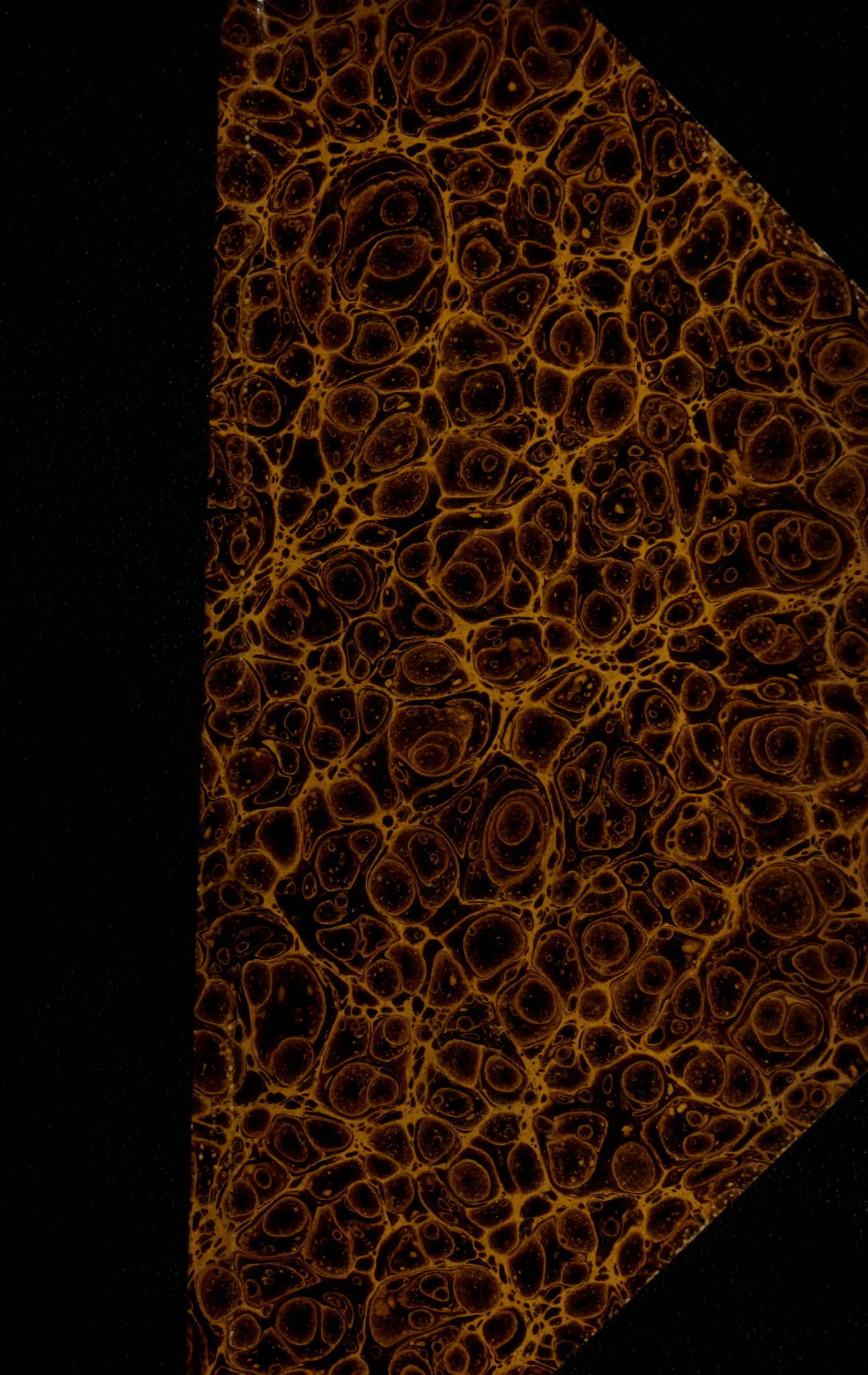




THE DENTAL REVIEW.

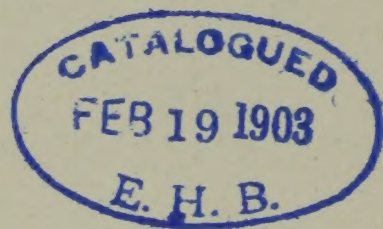
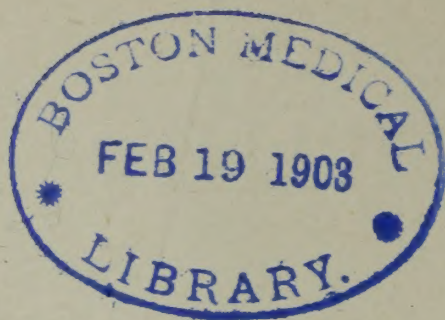
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DENTAL SCIENCE.

EDITOR:

C. N. JOHNSON, L. D. S., D. D. S

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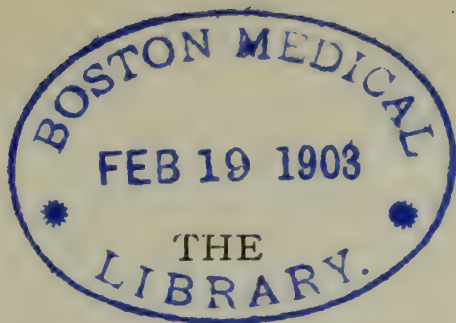
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DENTAL REVIEW.

VOL. XVI.

CHICAGO, JANUARY 15, 1902.

No. 1

ORIGINAL COMMUNICATIONS.

THE USE OF THE SADDLE IN STATIONARY BRIDGE WORK.*

BY HART J. GOSLEE, D. D S., CHICAGO, ILL.

It is probable that most all will now consider modern stationary bridge work, in the various phases of its application, to be a success, at least, in proportion to the practicability of its application, and the evidences of skill manifested in its construction; and also that in no other field in practical dentistry is it possible for the combined efforts of energy and genius to meet with so great and diversified a range of usefulness.

That particular phase of the subject indicated by the title of this paper is one which has occasioned much comment and controversy, with perhaps equally skillful men arrayed upon each side, and yet, withal, it seemingly still remains a mooted question in the minds of many.

The application and usefulness of a saddle, or *rest*, upon the tissue intermediate to the abutments, in the construction of stationary bridge work, is, in my opinion, frequently a *necessity*; but increases in usefulness in proportion to the accuracy of its adaptation, and in unhygienic qualities in the same inverse ratio. It has its limitations of usefulness, however, and is not only frequently unnecessary, but often entirely contraindicated.

In *porcelain* work, where the strength of the piece is more or less dependent upon the bulk or amount of this material used, the saddle affords the only *adequate* means of *supporting* the desired reproduction of lingual contour, and the necessary formation of the occlusal surfaces which are to be subjected to stress.

*Read before the Northern Illinois Dental Society, October 16, 1901.

Its use is also indicated in *extension* bridges of either gold or porcelain, where one or more posterior teeth, which will be required to assume their portion of the work of mastication, are carried anterior or posterior to the abutment crowns.

While in these cases the abutment roots must possess sufficient strength in themselves to afford ample support to the dummies, and the occlusion, when possible, should be so constructed as to throw the greater amount of work upon the abutments, if this requirement is not observed, the displacement of the piece invariably eventuates.

Also, in typical bridge cases, where the opposing teeth throw the greatest amount of work upon the dummies, a rest upon the tissue beneath the area of greatest stress is often indicated.

And in cases where the occlusal surfaces of the opposing teeth are in close proximity to the tissue in the space to be bridged, a condition commonly called a close "bite," and where the dummies to be supplied must possess a masticating surface in order that such a bridge may be serviceable, the use of a well adapted saddle will result in a far more hygienic condition than the lingual *shelf* formed by the attachment of the cusps to the facings.

Whatever advantages a saddle may possess, however, there are conditions contraindicating its use quite equal in importance to those indicating it.

In bridges extending anterior to the second bicuspid, supporting one dummy, a saddle is not necessary. Also in those cases where the abutment roots are close enough together to withstand the stress imposed upon the entire structure, and where the occlusion is favorable and opportunity is abundant for self-cleansing; where complete absorption has not taken place; and wherever and whenever every facility is or may not be employed to secure and sustain perfect adaptation.

As has been said, the success or failure of the saddle is in proportion to its perfect adaptation to the tissue upon which it rests. In size, it should be no larger than is necessary to the work to be assumed by the teeth it is intended to support, and should be made of platinum, because of the nontarnishable quality possessed by this metal.

The following method is recommended for accuracy in obtaining adaptation and certainty in results: The abutment caps or crowns should first be completed and adjusted to position on the roots. An impression of them and the intermediate tissue should then be taken

in plaster. If the crowns are withdrawn in the impression, they should be detached and laid aside. The open ends of the impression should then be filled in with mouldine or plaster. The die should be secured with any fusible alloy, and will present a reproduction of the abutment crowns in position, and their relation to the tissue upon which the saddle is to rest. This should be built up, as indicated, in order to form a matrix for the counter-die, in which it is only necessary to leave the surfaces of the crowns presenting toward each other, and the intermediate ridge exposed.

After dusting the surfaces with lycopodium, the counter-die may be easily secured of the same alloy. Thirty-two gauge platinum or platino-iridium, if stiffness is desired, should then be swaged and trimmed to the required form.

In broad, flat ridges, the saddle should be proportionately larger than in thin, sharp, narrow ones. The usual width varies from three to five-sixteenths of an inch.

When the wider saddle is indicated, it is usually best to leave it full width, immediately beneath the dummies *only*, by cutting it away to some extent in the interproximal spaces, as originally suggested by Dr. W. H. Taggart. Such a shape affords opportunities for more self-cleansing interproximal spaces, and at the same time, sufficient support and lingual contour under each dummy. When properly swaged and trimmed, the crowns should be adjusted to the roots, and the saddle finally adapted in the mouth. Each end should be trimmed, so as to come in *direct contact* with the crowns *when pressure is applied*, and the edges should not be allowed to lap over upon them, as such a joint would destroy the assurance of accuracy of adaptation to the tissue at this vulnerable point. To absolutely preserve the true relationship between crowns and saddle, an impression in plaster of the parts, *with sufficient pressure* upon the saddle, is necessary. By utilizing a modification and more practical application of the suggestion offered by Dr. W. E. Griswold, such may be secured by the use of a piece of orange-wood of suitable length to keep the mouth open, with one end resting upon the center of the saddle, and the other against the opposing teeth or ridge. By firmly closing the jaw, the saddle is then gradually and gently forced into the tissue, when the impression can be taken *without* removing the prop, or relieving the pressure.

For this purpose, an ordinary partial impression tray (S. S. W., No. 30, 31) is used, with a *slot* cut into it from the *heel* sufficiently

wide to accommodate or straddle the prop so that when filled with plaster it may be easily carried to place.

When the impression has been secured, it should be filled with investment material, which, after separating, will admit of the permanent attachment of the parts with solder. The piece should then be replaced in the mouth and finally adapted by burnishing, and the "bite" and final impression then secured, for the completion of the work. N. B.—This same procedure is also equally as applicable to the construction of *removable* work, by any of the various methods, and admits of securing an adaptation which precludes any subsequent change of relation.

In mounting *fixed* bridges, however, when a saddle is used, gutta-percha is always indicated, because of the difficulty encountered in preventing the surplus cement from flowing in between the saddle and tissue, and its resultant irritating influence.

EXTRA-GENITAL SYPHILIS.*

BY L. BLAKE BALDWIN, M. D., CHICAGO.

The subject of extra-genital syphilis is one of vital importance to the medical profession in general, and their brethren, the practitioners in dentistry. To the dentist the early recognition of syphilitic lesions in parts often far distant from the sexual apparatus becomes of especial significance in the treatment of many patients who may be absolutely innocent of inoculation through the medium of sexual intercourse. The social and business status of the individual may demand consideration and most energetic scientific treatment be at once instituted. I may positively state that such cases often escape the notice of the dentist.

When one considers the extreme virulence of the "placques mugueuses," as compared with chancres of the genitals and the frequency with which lesions of the nose, mouth and adjacent cavities are diagnosed as sore throat, tonsilitis, fever sores, thrush, irritation from smoking (forgetting the role tobacco plays in secondary syphilis), one is impressed with the ignorance of the examiner and the consequent danger to his patient. This carelessness in diagnosis is too often coupled with criminal negligence in the proper sterilization of his instruments, both before and after examination.

*Read before the Chicago Dental Society.

Extra-genital chancre and its allied condition, the secondary manifestation of luetic disease, should be carefully differentiated, if possible, as to diagnosis. While the mucous patch is an incident of secondary syphilis, it may be confounded with a true initial lesion of the lips, tongue, sides of the mouth and even tonsil. The entire absence of genital chancres in such cases, must necessarily confuse the ordinary observer. I have a series of personal cases of direct inoculation through the media of perverted sexual intercourse where the diagnosis had to be made on the local manifestation as no history could be obtained at the time of examination.

Syphilis is a chronic infectious disease which begins in a local lesion, called a chancre or initial lesion. This initial lesion usually appears about three weeks after inoculation. The site is the point where there existed a solution of continuity of the epidermis at the time of absorption of the virus. Secondary manifestations do not begin to appear for from four to six weeks after the initial lesion. They are usually ushered in by slight fever, headache and malaise. These secondary manifestations consist of eruption on the skin, which would take too long to describe in detail. With this eruption, or following closely upon it, appear the mucous patches, and in women especially are the first symptoms that are noticed. At this stage also we have the beginning of alopecia, which is not a constant symptom, but only to be taken into consideration. We also find enlargement of the cervical and submaxillary glands.

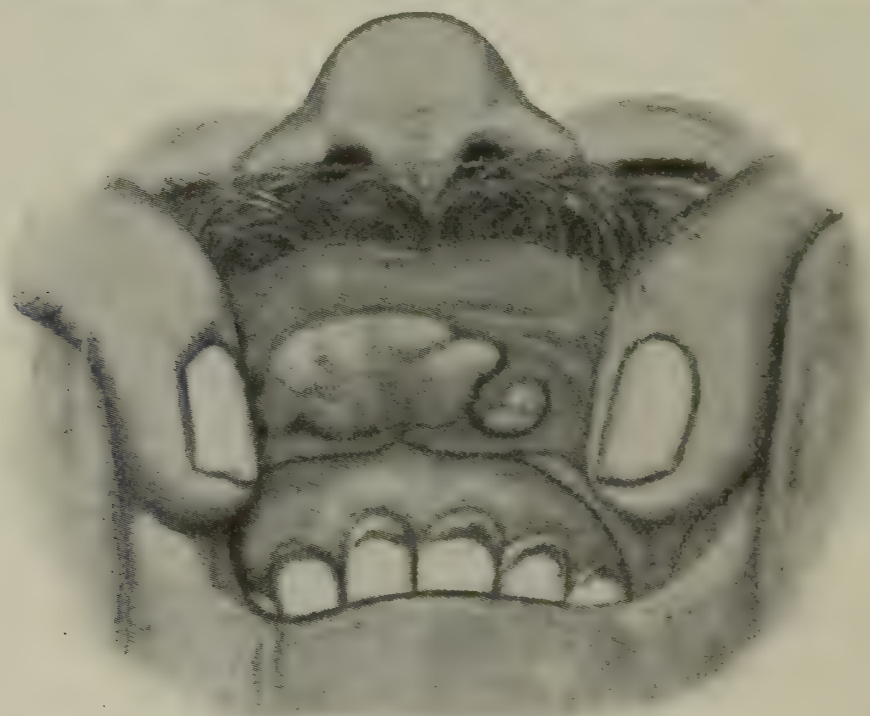
I shall not attempt to describe a mucous patch to you, as it is my firm belief that an accurate description of it is impossible. I prefer to demonstrate twelve cases collected during the past week, and I feel that after examining them you will be better able to recognize a mucous patch than by any description I might give. There are a few distinguishing features.

The so-called third stage of syphilis is the destructive stage. Its lesions are deeply seated, and in the oral cavity attack the subdermal and submucous connective tissue with accompanying necrosis of the bones themselves. It is very important that a dentist should be able to make a differential diagnosis between the lesions of these various stages.

There are two methods, immediate and mediate. Immediate infection is the more common method of communication. Under this head comes kissing, biting and sexual intercourse, etc.

Mediate infection. While this form of infection is less frequent,

it is more important to you as dentists, as it is through the medium of your instruments or fingers that the infection is transferred to yourselves or others. Other instances may be cited, such as the handling of partial dentures by the dentist, the sharp clasps, pricking your fingers, etc. Many cases of infection are reported by the means of articles of table furniture, cups, knives, forks, napkins, etc., these being excellent carriers of infection. The universal hotel towel and the drinking fountain tin cups are other important media, especially the latter, their rusted edges making the slight abrasions necessary for the entrance of the virus with which each one must be loaded. Pipes, cigars, cigarettes, whistles and lead pencils are very



MUCOUS PATCH.

commonly prominent factors in successful inoculation. There are many rare and curious media, such as veils, hatpins held in the mouth, faucets, ink erasers, etc., which play a more accidental role.

Should you be able as dentists to recognize syphilitic manifestations of the oral cavity? I see but one answer to this very important question. You should be able to make a guarded diagnosis of chancre and a positive one of a mucous patch. If a dentist fails to recognize syphilis in his patient's mouth, is it logical to suppose that he will be able to recognize a chancre on his finger? If he be not able, how many people will be exposed to infection before his condition is diagnosed for him? For further answer I have but to

quote from Fournier, the great syphilographer. He considers four syphilitic lesions as the principal agents of transmissions.

1. Chancre.
2. Mucous patch.
3. Ulcerations.
4. Blood in secondary state.

Of the first two, the chancre and mucous patch, the chancre plays but a small part while the mucous patches play an enormous role. Out of twenty cases caused by the two, the mucous patch would cause eighteen, the chancre two. This is easily explained by the transitory character of the chancre which disappears after two or three weeks, never to be reproduced, while the mucous patch may recur twenty or thirty times. Multiple localization of mucous patches occur on the lip, mouth, tongue and vagina vulva, penis and skin. These long periods of recurrence after many years being especially dangerous during the first three years, and the fact that the latent are regarded as so trivial emphasizes the importance of this manifestation. Ninety-nine per cent of the married men who infect their wives do so by mucous patches. The great point in the prophylaxis of syphilis is sterilization of the mucous patch, which must be done over and over again as often as it recurs.

All this by Fournier, nor is he alone in his opinion of the comparative virulence of those two forms of syphilitic lesion. A Ravogli, in the *Cincinnati Medical Standard*, 1895, says: The Hungarian chancre has not so great a power to transmit syphilis as the mucous patch. E. Harrison Griffin reports twenty cases of chancre of the lip, etc., in the *New York Medical Journal*, 1896. His direct statement is the same. The mucous patch is the chief source of transferring syphilis.

That my opinion concerning the importance of the dentist's recognition of syphilis is based on indubitable fact may be gathered from these statements of prominent authors. There are many others as decided in their opinions.

What is the probable result if the dentist fails to recognize syphilitic lesion of the oral cavity?

Firstly, he runs an imminent personal risk of great magnitude. He may directly infect a finger or hand, or may carry infection to some vulnerable portion of his body, the finger perhaps escaping. The slip of an instrument, a scratched finger, and in a few weeks a chancre. The patient coughs in your face and the saliva, mingled

with the deadly virus, effects an entrance in the eye, the nostril or perhaps a fever-sore or cracked lip. Suppose a stubborn ulcer to result would he be suspicious of his actual condition or would he go on treating the patients, possibly putting on a plaster or collodion dressing, ensuring to the virus a practically undisturbed field for extension? Never forget that a syphilitic lesion becomes a source of danger to others before it causes you any personal inconvenience. From now on you become a hot-bed of infection to your patients. The possible injury you may do is thus plainly in direct ratio to your ignorance and your sense of personal responsibility. That such a criminal condition exists among dentists either through a lack of proper early training or carelessness in examination and operating is well known.

Case. A dentist came to me with a rapidly enlarging ulceration on the lower lip. Dusting powders and ointments had produced but little effect. He denied having kissed any one but his wife, but stated that he was in the habit of holding instruments in his mouth to facilitate his work. He brought me a list of patients treated during the past six weeks. One woman, he remembered to have had white patches on her tongue. He examined her at my suggestion and found several large ulcerations on her tongue and tonsils. The cervical glands were enlarged and her hair beginning to thin. She was entirely ignorant of her condition. In a few weeks the secondary eruption appeared on the dentist's body and specific treatment was begun.

It would be easy to pick a number of similar incidents from my experience. Were it not so this paper would not be brought to your attention.

If the pathetic results of these cases were confined to the dentists and an occasional patient the consequences, although serious enough, would not approach their actual magnitude, both as regards the victims' families and the community at large.

For a surgeon to neglect due precaution against infection, both of himself and his patients, at once lays him open to the unsparing criticism of his professional brethren and should his carelessness become known to the patient or his friends, the consequences may be serious indeed. In the opinion of Dr. J. G. Kiernan, the well-known medico-legal expert, the basis of a malpractice suit is the absence of due diligence on the part of the defender. A dentist who fails to recognize the presence of an infectious constitutional disorder ex-

hibits a lack of skill and is consequently liable to civil damages and if serious consequences result as regards life, is open to criminal action.

Alice M. Steeves, a member of this society, in an article read before the section on Stomatology of the American Medical Association, says :

"The dentist should receive the same preliminary education as the medical specialist, because in so far as dentistry is more than a mechanical art, it depends on the same sources and requires the same studies as all other departments of medicine and surgery. The principles of disease are the same, whether they occur in the internal organs, the extremities or the teeth. A knowledge of these elementary principles in one set of organs requires the same studies as that of any other group of organs in the body. The necessity for more complete pathologic training becomes apparent whenever the dentist attempts to treat diseased conditions of the mouth."

Are lectures on syphilis of the oral cavity given to the students of to-day? Is the didactic method sufficient? What practical demonstrations of chancre and mucous patches did you see in your course in college? What is being done for the instruction of the students of to-day in this most important pathological condition of the mouth? In only one of the text-books on dentistry in common use to-day is the mucous patch mentioned as being liable to infect you or others. Neither are instructions given in these books as to precautions to be taken when operating on these cases.

The one book I refer to is Burchard's work on Dental Pathology and Therapeutics, which gives a good description of these lesions. Dr. Elliott R. Carpenter, in a paper published in the DENTAL REVIEW of April, 1898, says, in speaking of syphilis of the mouth :

"The undeniable fact that there exists such gross ignorance on this subject among our profession is undoubtedly due to the lack of professional information in regard to it. While it should be considered as thoughtfully and comprehensively as other diseases of far less prevalence, it is not intelligently recognized at all in the curriculum of any dental college in this country. That this fact is true is as indisputable as its existence is reprehensible."

PERIDENTAL ATROPHY.*

BY ROBERT T. AISTON, D. D. S., CHICAGO.

In this article I do not intend to weary you with the history of the disease in question, for that has been exhaustively dealt with in our journals and in works on dental pathology; neither do I wish to weary you with long quotations, meaningless words, sentences, or paragraphs. I wish to be brief and to the point.

I think I realize that, due to my position, my very limited experience and my immature years, I am taking a great deal of liberty in criticising men of mature years and wide, unlimited experience, and that I am assuming a great deal when I place myself in a position where men have been placed by their untiring energies and long years of experience, but you, I hope, will pardon me and offer an apology for my presumptive action rather than place your heel upon my neck and crush me into obscurity and blight forever a growing twig that perhaps may some day develop into a fruit-bearing tree; and, if I should be so fortunate as to produce any good fruit, I invite you to take and eat for the good of yourselves, and humanity, and not for my glory. I am not seeking glory, but I am seeking that which shall elevate and enlighten and will alleviate the sufferings of our brothers and sisters. I am taking a position that I feel I am unworthy to take—the position of a critic and nomenclator.

In the first place, I wish to deal with the nomenclature of this disease of the peridental membrane, commonly called *pyorrhoea alveolaris*.

Pyorrhoea means a flow of pus. It is possible to have a flow of pus from any tissue of the body—however there may be exceptions; therefore, to call this disease *pyorrhoea* does not convey to any one's mind what the true nature of this disease is or where it is located. *Pyorrhoea* is not a disease nor the cause of disease, but is a symptom of a lesion. It seems to be the object of pathologists in naming diseases to give the diseases names which locate them and give them their characteristics; as, *periostitis*, *pulmonary tuberculosis*, *pericarditis*, etc. If we modify the term *pyorrhoea* by *alveolaris*, this modification is not sufficiently restrictive, for there may be a flow of pus from the alveolus without there being any disease of the peridental membrane, as *pyorrhoea alveolaris*, so-called, is a pathological condition of the peridental membrane. Often there is a flow of pus from

*Read before the Odontographic Society of Chicago, Ill.

the alveolus, resulting from an alveolar abscess, the fistula of which is at the free margin of the gums. After the abscess is cured, this channel along the root of the tooth between the peridental membrane and cementum or between the peridental membrane and alveolar process is completely closed up and no farther trouble results. This flow of pus from the alveolus is not the so-called pyorrhoea alveolaris. So, if we did not know that pyorrhoea alveolaris had come to mean a diseased condition of the peridental membrane, how could we differentiate between this disease of the membrane and an alveolar abscess that discharges from the alveolus, or from beneath the free margin of the gum? Farther, it is my opinion, and not mine altogether, that a large percentage of cases of so-called pyorrhoea alveolaris is not accompanied by pus. In fact, I have seen several cases where there were no perceptible evidences of pus. There may be, however, pyogenetic microorganisms present, but these are found in nearly every mouth, whether there be disease or not. Yet, I believe that in a large majority of cases, pus is present, but in nearly all these cases of pyorrhoea there is acute or chronic inflammation of the gingivae. Where there is no gingivitis there is not apt to be pyorrhoea. Sometimes the gums present an anaemic appearance and not a hyperaemic; consequently, there is no inflammation. We will drop this name from our nomenclature for the present at least.

Again, one author has seen fit to call this disease of the peridental membrane, phagedenic pericementitis. Pericementitis conveys to our minds this: that there is an inflammation in the peridental membrane, or pericementum.

Phagedenic pericementitis is not an inflammation; i. e., there is no evidence of inflammation as far as can be discovered by the dentist, and this disease will progress in its worst form, even involving the entire dentition without the possessor being conscious of a pathological condition in the mouth. They only know something is wrong when their dentist tells them, or when the disease has progressed so far that the tooth becomes loose in the alveolus and by its movements sets up an irritation, or, as sometimes occurs, the root is denuded by a narrow pocket to the apex and the result is pulpitis, accompanied by severe pain. But until this condition occurs, there may not be any inflammation. There is, however, sometimes inflammation accompanying this disease. I have seen several cases that have shown evidences of an inflammatory condition. Let me cite one, if you please. A gentleman had a gold filling inserted in the mesial

surface of an upper left lateral. I did not make any examination of the tooth before inserting the filling, because from all appearances it was a healthy tooth. A few days afterward he called, complaining of pain, and soreness in the lateral, and approximating cuspid. At first I did not understand what the cause of the trouble was, but being determined to know, if possible, I made a thorough examination of the teeth affected, and discovered a pocket on the mesial surface of the lateral, extending nearly one-half way to the apex. The pressure on the mesial surface of the lateral was crowding it so firmly against the cuspid, that pain was produced like that resulting from regulating teeth. The root was cleaned of the accumulations along this pocket and thoroughly cleansed. Then a mild antiseptic and sedative was used in the pocket. The patient was dismissed and instructed to return if the trouble continued. No doubt all of us have seen teeth nearly pushed out of their sockets by inflammation. If not by inflammation, what? But invariably when inflammation accompanies this disease, we will find it produced by some mechanical or chemical means; such as calculus, acids, or ptomaines of microorganisms, etc. Inflammation is not a perceptible characteristic of phagedenic pericementitis. Mr. A., aged forty-five years, came to my office, complaining of having trouble with a tooth. On examination I found a lower third molar very loose and tender, and I also found every tooth (and he had thirty-two) more or less affected with the disease in question. He said: "I did not know I had any teeth until that back one became sore." There had never been any soreness or inflammation (for if there had been any inflammation there would have been soreness) until the tooth became so loose that it became a mechanical irritant. Inflammation and soreness followed. The tooth was removed. This was four years ago, and there have been several removed since, and during all this time, with the disease still existing and progressing, there has been no soreness or uncomfortable feeling whatsoever in any of the teeth, even in those of the necessary subsequent extractions, until by their looseness, inflammation was caused. Inflammation cannot exist in any tissue without there being more or less hyperaesthesia. The degree of pain or discomfort experienced, will depend upon the parts involved during the inflammatory process. If the inflammation is confined to the soft tissues, and especially if those tissues are not well supplied with nerves and the inflammation is not deep seated, but superficial, there will be little or no pain; only, perhaps, a slight uncomfortable

feeling. Of course, this will depend to some degree upon the extent of the inflammation. But if the inflammation occurs within the bones, or on the surfaces of the bones beneath the periosteum, where it is deep seated, and the tissues are highly vascular and well supplied with nerves, there is quite apt to be severe pain. The pericementum occupies a position which, when inflamed, causes it to respond by pain or tenderness more or less severe, according to the extent of the inflammation. This membrane is well supplied with blood vessels and nerves, and is between two hard, unyielding walls, and we are, therefore, quite apt to be conscious of the slightest inflammation. How extremely hyperaesthetic, or painful is pericementitis, even apical pericementitis. If you know nothing of this disease from personal experience, you know something about it otherwise, for it is a very common disease.

Now, if we modify pericementitis with the adjective phagedenic, we have not helped matters in the least. Phagedena is a Greek word, meaning to eat. In a medical sense it has been used to mean a canine appetite, but in this sense it is obsolete. It is now used to mean a spreading, obstinate ulcer. In this disease of the peridental membrane, there is practically no similarity to ulceration in causes, symptoms, or phenomena, at least in the great majority of cases.

From a pathologist's point of view, the giving of a name to a disease and having that name comprehensive, inclusive and restrictive, must result from a thorough familiarity with the character and location of the disease. Then, in order that we may give this disease of the peridental membrane a proper name, it will be necessary for us to have a thorough knowledge of its true character and location. The reputation that a disease has is not sufficient grounds for giving it a true or scientific name.

So far, in this paper, only two names, pyorrhoea alveolaris and phagedenic pericementitis, have been used. These are the only ones I will refer to, for this reason, that these are the only ones generally used, all others being practically obsolete, or not in general use.

I think it has been clearly shown (and I am not alone in this opinion) that inflammation is not a necessary characteristic of the disease, but may or may not accompany it; therefore, to imply in a name that inflammation is always present, is merely a misnomer. Again, to imply in a name that pus is always present is also a misnomer. Pus is a product of suppuration, and suppuration is a process or result of pyogenic cocci, acting on devitalized animal tissue and

inflammatory exudates. But there may be a destruction and disappearance of any tissue of the body by a pathological or physiological atrophy and otherwise without pus being formed; and in this disease of the dental membrane, there may be, and often is, according to the best dental pathologists, a complete wasting away of the membrane without the formation of pus. The perceptible presence of pus is due to the lack of care one may take of the mouth, very often, while suffering from this disease. It is my opinion, and one based upon close observation, that this disease will make progress, yet not so rapidly, even though it were possible to keep the mouth in a perfectly aseptic condition; for the reason that the beginning and continuation of the disease is not dependent upon the presence of any micro-organism, specific or otherwise. It is therefore not transmissible; at least the infectious theory has never been proven beyond a possibility of doubt.

That septosysm is a potent factor in the more rapid progress than would be if the mouth were aseptic, there can be no doubt, at least in my mind.

This disease has, under some of its various forms and conditions, some of the characteristics of an ulcerative process, and it has been called peridental ulceration. The essential difference between an ulcer and an abscess, is that the one is without the tissue or originates on a natural surface of the body, while the other is within the tissue, yet both are a suppurative process. As this disease is not caused or continued by any microorganism, it would logically follow that it is not primarily a suppurative process. The late Dr. Luman C. Ingersoll in 1889, in a book entitled "Dental Science," on page 118, in a chapter on Dental Pathology, speaks of a pathological condition, peripyema, or pyorrhoea alveolaris, so-called, and gives as a characteristic symptom a discharge of pus around the necks of the teeth, etc.; tissues involved, peridental membrane, parietes of the alveoli and the inter-alveolar bone; etiology, syphilitic, mercurial, catarrhal, contagion propagated by microorganisms, and that it is a premature senile development, occasioned by general physical depravity and lack of nutrition. Again, he speaks on page 120, under the topic "Diseases of the Gums," of another diseased condition, involving the same tissues as in peripyema, plus the gums, and calls it "phagedenic ulceration." He says: "It is characterized by a peculiar destructive process without inflammation in the surrounding tissues, wholly unlike peripyema, deep-seated ulceration, or surface ulceration." And

yet he calls it "phagedenic ulceration." He further says: "It is characterized by making progress in a straight line from the margin of the gums to the apex of the tooth root, destroying the membrane without any tendency to spread laterally, unless encouraged by other causes operating to inflame the gums, and that it is more commonly found in clean, well cared for mouths than in mouths neglected." In the former, Dr. Ingersoll seems to be describing what we know to-day as calcic inflammation, in the latter he apparently refers to our so-called phagedenic pericementitis, or pyorrhoea alveolaris.

In the remainder of this article I shall use two names to designate two different pathological conditions; they are calcic inflammation and peridental atrophy. Farther on I will show why I use these names and these only.

Dr. Ingersoll's theories in regard to symptoms, causes and treatment of the two diseases, which he refers to, are not recognized as authentic, at least not all of them; but some of his ideas will never be rejected by the dental profession. I do not wish to dwell upon the exploded theories, opinions or methods of the past, but rather do I wish to consider the theories, opinions and methods of the dental writers and lecturers of to-day.

Calcic inflammation, an inflammation of the gingivæ, caused by mechanical and chemical irritations, such as roughened edges and surfaces of calcareous deposits upon the teeth, known as salivary calculus, and by microörganisms, their by-products and ptomaines; symptoms, hypertrophied, hyperaemic or inflamed gums, salivary or serumal calculus, and sometimes both, about the necks of the teeth, and pus, but not always. The disease confines itself more to the buccal and labial portion of the gums than to other localities, but may extend entirely around the teeth; it also may affect the peridental membrane, causing its destruction, but this destruction more often circumscribes the root rather than extending by narrow pockets toward the apex.

Calcic inflammation is often mistaken for peridental atrophy. The important thing for us is to differentiate between these two diseases. The symptomatology and etiology of calcic inflammation is not the symptomatology and etiology of peridental atrophy. There is one symptom in a true case of phagedenic pericementitis, or pyorrhoea alveolaris, when we mean by these names a wasting away of the peridental membrane, that is always present, and this symptom is a partial or entire loss of the peridental membrane. Then if this

symptom or condition is always present, under all circumstances, without any exceptions, and the other symptoms or conditions as so often given in this disease are not always present, is it not logical and reasonable to call this disease of the peridental membrane, peridental atrophy? This name locates the disease and characterizes it; for it is located in the peridental membrane exclusively, and it is an atrophy; not being a suppurative process, and therefore not depending upon microorganisms.

The destruction of the alveolar process and the recession of the gums, when they do take place, are secondary symptoms. It is the general opinion that the process is absorbed for the same reason and in like manner as it is after the removal of a tooth; because it has ceased to functionate, and therefore as nature has intended when an organ or tissue has ceased to be what it was intended to be, or is of no more use, is removed, partially or entirely.

Atrophy as defined by Zeigler, is diminution in size of an organ, as the result of diminution in size and disappearance of its elements.

When atrophy of an internal organ or tissue takes place, the elements are carried away by the blood. This would seem to be the manner in which the elements of the peridental membrane are carried away in the incipient stage of this disease; that is, when the membrane begins to lose its vitality and become weakened.

The destruction of the membrane does not appear to be a gangrenous process, and yet I cannot help but believe that there is a death of the tissue, and it is disintegrated by a suppurative process and flows from beneath the gums, or forms an abscess and breaks through the gums, as some of the elements of pus; or that the tissue dies and disappears by sloughing away from the living tissue and that this process goes on even to the destruction of the entire membrane. If it be atrophy at all, it is pathological atrophy, and the wasting away of the tissue is carried on in a different way from the usual process by which the cells of the tissue disappear in physiological or pathological atrophy. I had the great privilege and pleasure of consulting Dr. G. V. Black on the destruction or disappearance of the membrane, and when I asked him just what the process is by which the membrane is removed he replied: "I don't know, but it seems to be a process of suppuration; yet," said he, "I have seen cases where there was no evidence of suppuration; it just disappeared and that was all there was of it." But suppose it be a suppurative process, what induces this suppuration? Is it the pus

organism? By no means. There are conditions which must precede the suppurative process. Come, let us reason together. Will an abscess or ulcer form under ordinary circumstances; that is, as to environments, and when the tissues are in a state of normal health and vitality? This question will be considered again farther on in this paper. It is illogical, unreasonable and unscientific to suppose that microorganisms, calcareous deposits upon the crowns and roots of the teeth, injury to the gums or membrane, foreign particles lodged under the gums or that a uric acid diathesis, or any other diathesis or many other so-called causes are the causes of this disease of the peridental membrane, which disease I will hereafter call peridental atrophy.

Let us examine the so-called causes. Where is it recorded in pathology that there has ever been a pathological condition caused by microorganisms which results in the destruction of any tissue organ or membrane operating in like manner as they are said to do in the destruction of the peridental membrane, and under the conditions which may exist in the oral cavity? Farther, there are no diseases which flesh is heir to that primarily are caused by microorganisms. No bacteriologists have been able up to the present time to obtain a culture whose habits are to destroy tissue, as they are said to do in peridental atrophy, and probably they never will. There is no microorganism under ordinary circumstances that can attack and destroy normally vital tissue. Pathologists tell us that a perfectly healthy animal organism is immune from infection. Draw your inference. Microorganisms may accelerate peridental atrophy, but do not and cannot cause it.

If bacteria were the cause of infectious diseases, including decay of the teeth, then would every one have infectious diseases and every one would have decayed teeth, for the very air we breathe, the water we drink, and the food we eat, is impregnated with pathogenic bacteria as well as nonpathogenic.

When pus is found oozing from the free margins of the gums, it is due first to the fact that the gums or peridental membranes are in a condition which favors the formation of pus; and, second, that there has been an invasion of the pyogenic microorganism. Pus cannot be generated without first there is present those elements which, when acted upon by the pus producing organisms, will become pus.

It might be well just here to speak of the ordinary way in which

pus is formed, and also the usual elements of which it is composed.

First, there is an irritation followed by congestion, also followed in regular order by the different stages which lead to inflammation. In the latter stages of inflammation there is tissue necrosis; however, this may occur before, after, or during the exudation of those elements which pass through the blood vessels and are known as inflammatory exudates. These exudates are composed of liquid portions of the blood and of leucocytes, or pus corpuscles, and sometimes the red corpuscles.

The ordinary pus, such as is found in ulcers, abscesses and about the necks of the teeth, which is produced by an ulcerative process, is composed of these inflammatory exudates, pus cocci, and necrotic tissues. Pus, as we know it, and as it is seen oozing from the free margins of the gums—an opaque, creamy, yellowish white or greenish white fluid—is not formed alone from necrotic tissue, but is composed also of inflammatory exudates. So, if this be true, how is it possible to have pyorrhoea when there is no inflammation in the tissue from which pus is said to flow?

Often certain foods when mixed with mucus or saliva, and have been forced beneath the gums and into the pockets formed in periodontal atrophy, have the appearance of pus, and are often mistaken for it.

The pus producing coccus, *staphylococcus pyogenes aureus*, the one most often found has the power to liquify the required pus elements, as is shown by their action on the gelatine culture medium, and may produce pus from necrotic tissue alone, provided the environments are favorable. According to Zeigler, "the inoculation of mice, rabbits and guinea pigs by pure cultures produce suppuration, and in man the presence of large quantities of staphylococci causes necrosis of tissue, and subsequently inflammation and suppuration, which finally runs on to abscess formation." This fact, no doubt, will account for the destruction of the gums and periodontal membrane, and perhaps also of the alveolar process by first causing the death of the tissues and then the formation of pus from the exudations and necrotic tissues.

The removal of the causes of the destruction of these tissues, will not cure this disease; that is, periodontal atrophy, which, in many cases confines itself wholly to the periodontal membrane. The causes, deposits of salivary and serumal calculus upon the teeth, the presence of large quantities of staphylococci and perhaps other deleterious

germs are found in neglected mouths, and these causes are aggravated by the way we live and the food we eat. But the symptomatology of a disease we may call calcic inflammation is not the symptomatology of periodontal atrophy. These two diseases very often co-exist, yet we may have either one existing alone. When they do co-exist, there is most invariably serumal deposits upon the roots. These deposits are not liable to occur unless there is inflammation and necrosis in the surrounding tissues.

Again, that deposits upon the teeth are the cause of this disease is one of the most illogical, unreasonable and unscientific of all the so-called causes. There can be no deposits on the roots until they have been denuded of their membranes. Calculus on the roots is preceded by the destruction of the membrane. There are many cases existing with this history: Gums nearly in a normal condition, no soreness of the periodontal membrane, very little pus, if any at all, no salivary calculus except on lingual surfaces of the lower anterior teeth, and no deposit on the roots, as far as can be discovered; and yet nearly every tooth may be affected more or less; the roots being denuded by pockets of varying widths, and on some of the roots the membrane may be destroyed circumferentially to perhaps two-thirds the way to the apex or more. Here the disease does exist and there are no deposits to be found and there have never been any removed. Surely calcareous deposits were not the cause in this case. Deposits on the teeth beneath the free margin of the gums and on the roots, seem to be a result of a degenerate condition of the gums or periodontal membrane. "The cause of calcification (pathological) is for the most part to be found in local changes in the tissues since the deposits of lime salts usually occurs in localities in which the tissue has already died or is in process of degeneration and necrobiosis. It looks as if dying tissue, which has undergone more or less modification, possesses a kind of attraction for the lime salts in solution in the body, and enters into intimate combination with them." (Zeigler.) This seems to be true of serumal deposits upon the apical portion of the root in necrobiosis, resulting from an alveolar abscess, and it would also appear that the deposits upon the necks and roots of the teeth are the result of retrograde tissue change; hence, it follows that the tissue changes cause the deposits, not the deposits the pathological condition. The amount of the deposits would seem to be governed by the amount of lime salts held in solution in the body. As is often the case, there is an absence of deposits upon the crowns,

necks or roots of the teeth in the progress of the destructive process of the peridental membrane and alveolar process.

That this disease is not caused by syphilis, mercury, catarrh, foreign particles under the gums, injury, general lack of nutrition, or a uric acid diathesis, is evident to the majority of dental pathologists, and is unreasonable to suppose they are the causes; for the disease does exist without the presence of any of these so-called causes. Yet it is the opinion of the writer that with the predisposing cause present and with any or all of the so-called causes present, the disease is more apt to occur and progress more rapidly than it otherwise would, but there must first be a predisposition. This is generally true of all diseases whether infectious or otherwise.

There seems to be a preponderance of evidence that this disease is not a local manifestation of a dyscrasia or diathesis or any other systematic condition, but rather that it is a local disease and may be accelerated or started by local or even systemic conditions.

Tissues of the body have no power within themselves to die and disappear.

That predisposition and immunity to certain diseases exist to a greater or less degree, is beyond question. If one is susceptible to a certain disease, this susceptibility is termed predisposition; and if one is unsuspceptible to a certain disease, this condition is immunity.

There seems to be a predisposition and immunity to this disease of the peridental membrane, for under like circumstances and so-called causes we find the disease and we do not find it.

This predisposition may be congenital or acquired, but originally it was acquired. If congenital, it may be brought to a state of immunity or it may be brought to a greater susceptibility in the same way that it was acquired. If the disease may be inherited, it would appear that each succeeding generation would be more susceptible to it. It is my belief that there are more cases of peridental diseases to-day than there were yesterday, more in this generation than in preceding, more in this century than in the last, and that there will be more in the succeeding generations than in the present, unless the predisposition can in some way be brought to an immunity. This is possible, but not probable. That this disease will occur earlier in life in the succeeding generations, is not at all improbable.

At the present time it does not manifest itself until about 30 years of age, but in some cases may begin before that age. Some writers say that it rarely appears before thirty-five, but I think we will be

safer in putting it at thirty. We often read articles similar to the following in the journals and other dental literature: "Miss B., age twenty-eight, consulted me in May, '99. It was a case of pyorrhoea alveolaris of *many years* standing, and very aggravated condition; had been treated by various methods, but without improvement. Gums were very red and inflamed, and there was much pus, especially from the anterior. Scaled the teeth, etc. Used alkaline antiseptic wash to counteract the acid condition. This treatment was kept up for two months, when the patient was *entirely cured*, and there has been no recurrence."

This report was given about six months after the treatment was discontinued. I should like to ask what are the evidences of "entirely cured," and how are we to know there is "no recurrence" after so short a time as six months? Again, I should like to see a case of pyorrhoea alveolaris, and by this name we are to infer that the dental membrane is diseased and partially destroyed in a peculiar manner, that can be "entirely cured," and at the age of twenty-eight is of *many years* standing. I have never seen a case, nor have I heard from one who can speak with authority that they have seen such a case of wasting away of the membrane of many years standing at the age of twenty-eight, and that were ever entirely cured. Such reports are mistakes in judgment, diagnosis and prognosis.

The cure of calcic inflammation with these symptoms—viz., deposits about necks of teeth, food and large quantities of microorganisms on the teeth, pus, acute or chronic inflammation of the gums, etc., is a very simple matter, but to say that a cure has been effected in pyorrhoea alveolaris, or phagedenic pericementitis by any means yet given in the therapeutics of this disease, is the height of folly, reports to the contrary notwithstanding.

I have removed the cause of calcic inflammation many times, and the tissues by their natural tendency to heal have returned to a normal condition without any medicinal treatment whatever. Of course the mouth must be kept clean and this may be done with the brush and water.

I have also treated many cases of peridental atrophy and the treatment was the recognized therapeutics of the disease, but I do know that a cure was not effected, for in due time the symptoms returned. There was temporary relief from the troublesome symptoms and I might have reported a cure just as well as others have reported

cures, but I do enjoy a good night's rest, that rest which comes from a peaceful, natural sleep.

Some report cures from a mere antiseptic treatment, some from a mechanical or surgical treatment and some report cures employing the surgical and antiseptic.

Some recommend an alkaline treatment and others an acid treatment, yet all get the same result—a cure!

If we look closely we will find error or fraud, and perhaps both in these reports.

The cure of any disease can only be effected by removing the cause; treating the symptoms is in vain when a cure is expected. To restore to health and to cure are synonymous terms.

If deposits, microorganisms, injured membrane, uncleanness, mercurial poisoning, uric acid diathesis, general lack of nutrition, or any other so-called causes were the causes of this disease, more would have it, for nearly every one has one or all of these causes.

It seems that the real etiology of this disease has yet to be discovered, or if discovered, has yet to be recognized by the dental profession; for no two seem to be agreed upon any definite cause, treatment or prognosis.

No cause can produce more than one primary effect. Every effect has its cause. Some of us must be wrong in our etiology. There is only one cause, and can be only one cause. Many of the causes, so-called, may operate to bring about the effect of the cause more rapidly, but they are not the real cause. Some of the so-called causes are the symptoms of this disease. Let us learn to differentiate between symptomatology and etiology, and also between symptomatology and the disease itself.

After studying this disease for a few years—and my study has been from clinical observation and reading—I have come to the conclusion that the fundamental cause is a lack of normal vitality in the membrane, brought about by its nonuse, resulting in a deficient blood supply, and therefore the products of metabolism are not carried away, resulting in poisoning of the tissue. There is also a deficiency in the necessary supply of nutrition brought to the tissues. When a tissue, organ or body has ceased to perform its function, or does not get sufficient exercise, it wastes away—atrophies. The functions of the blood are to carry nourishment to and deleterious agents from an organ or tissue. When the blood ceases to do this, the tissue not only starves, but is poisoned by the products of cell living, and there-

fore dies. The normal blood supply of an organ is dependent upon the condition of the afferent and efferent vessels and upon the amount of exercise the tissue or organ receives. To the latter dependency we will confine our attention, for to that we are to look, I believe, for the cause of this pathological condition of the peridental membrane.

By an impoverishment of the blood we get cachexia, or marasmus of the entire system, and the same condition will exist in local parts, not particularly from a general impoverishment of the blood, but from an insufficient blood supply to the part. The general system may be well nourished, while local parts may at the same time suffer from lack of nutrition.

In local anaemia, or ischaemia, there results cachexia, or marasmus. This is due to a diminution in quantity of the cell elements and not to the disappearance of the cell itself; but there may be, and often is, a subsequent death of the cell. As to whether death will occur at all, will depend upon, to some extent, the parts involved and to extrinsic or intrinsic forces brought to bear on the cell. If it be gangrene, there will be sloughing or suppuration; hence the suppurative process noted in some instances in peridental atrophy. Not all necrotic tissues are followed by suppuration, whether an external or internal tissue, but may be removed by sequestration or exfoliation, desquamation or sloughing, and by absorption. It does not seem probable that the membrane is absorbed, but disappears by desquamation, or suppuration; but remember suppuration cannot take place till there is death of the elements required for a suppurative process, and there are present inflammatory exudates.

A tissue or organ deprived of its normal blood supply, results, from lack of nourishment, in atrophy and death of the part thus deprived. To hygienic exercise are all tissues of the body dependent for their growth and existence, without which there will be pathological or physiological atrophy and death. A normal blood supply results in growth or continuation of the tissue, a supernormal supply to hypertrophy and an infranormal to atrophy. The first condition is represented by a healthy person taking hygienic exercise; the second by the healthy manual laborer, and the third by the one not taking proper hygienic exercise, resulting in atrophy of parts of the body, or in general marasmus.

Any tissue of the body is subject to atrophy, pathological or physiological.

This disease of the peridental membrane, which is an atrophic

or gangrenous disease, is found usually in mouths of those who are living in our most advanced stages of civilization, and are subjects of these environments. Uncivilized people do not suffer with dental diseases as we do. The classes of people to which this disease has found access are those engaged especially in certain vocations.

It has been considered by many, if not the majority of the dental profession, that this disease is to be found among people who have unsanitary and uncared for mouths; at least, we may infer that they take this view of the question, for almost invariably those who have written on this subject have led us to believe that they have found more or less filth in the mouth about the teeth, deposits on them, pus, acute and chronic inflammation, congestion and hypertrophy of the gingivæ. Their treatment is to remove all deposits as if there were always deposits to be removed, use strong antiseptics and astringents, and antiseptic mouth washes. This view is decidedly wrong. I should like to relate a case, one like which you have seen, perhaps, many times.

The first case of this disease that came to my notice, outside of my college career, was, as I will describe: A lady about forty years of age, general health good, gums slightly anaemic, and not loose and flabby, as is generally reported, and a slight recession, portions of the process absorbed, peridental membrane badly affected, being entirely destroyed around some of the teeth, but especially by narrow pockets along the roots; no discomfort experienced, no pus (at least I saw none), and no deposits, either salivary or serumal. It was as well cared for as any mouth I had ever seen. Dr. Ingersoll says "this disease," which he calls phagedenic ulceration, and describes it as a destructive process involving the peridental membrane, along the root of the tooth toward the apex, "is more commonly found in cleanly mouths, well cared for, than in mouths neglected."

It seems that, due to the facts and evidences brought forth, that dyscrasia, diathesis, deposits, microorganisms, etc., do not enter into the cause and continuation of this disease; and that it does not confine itself to the humbler class of people, who do not have the time or inclination to take care of their mouths or general health, but that it has invaded and finds habitation in the mouths of those who dwell in palaces and live in luxury and ease. It is also more often found with the latter than the former. They will not eat the crusts of bread, and if they do, it is softened first in milk, tea, or coffee, until it is in a condition for deglutition without the process of mastication.

tion. The less the teeth are used the more inclination there is not to use them, and thus the membrane becomes weaker and weaker. All their food must be soft and tender, their steaks and roasts and chops must be of the choicest kinds; their cakes and pies and puddings melt in their mouths. What is the use of having teeth? They are only things of beauty. Their concern is not to their utility, but to this: "How will I look with no teeth, and I don't want false ones." The mill stones and the great rollers have succeeded their grinders, and the meat ax, the chopping knife, and the sausage grinders have taken the place of their incisors and molars. Who ever saw this class of people with wornout teeth?

In the summer of 1899 I removed twenty-seven teeth from a lady's mouth. The other five had been extracted for the same reason that it was necessary to remove the remaining twenty-seven. There was practically no decay and the teeth showed no wear to speak of. The fact of the matter was the teeth had nothing to do and they got into "loose" habits.

I am told by those who are in a position to know that this disease is very prevalent in the South, and especially among those who have their trained servants who must serve every article of food in a way to be approved by their most fastidious masters and mistresses.

Their vegetables are served in a way that they only need to be tasted and swallowed; their bread and biscuits are like the froth of an ocean wave; their pastries melt in their mouths like the light flake of snow under the glaring blaze of the summer sun; their meats need no mastication—only a swish of the tongue and they are gone, and their fruits are but juices, as it were, wrapped in colored papers. What is the use of having teeth? They are beautiful, but they are not to be used for fear they might be stained or broken or worn out. In fact, life is too short to be wasted in masticating food. They aim at beauty to the sacrifice of health.

Teeth should be used and not abused. Idle tissues, organs or bodies soon succumb to atrophy and death.

To the other classes of people subjected to this disease belong those whose vocations are such as to necessitate day after day and year after year a hurried eating of their meals. They only eat that which is prepared in such a manner as can be gotten into the stomach without the required time for proper mastication; thus the function of the teeth is not brought into use, resulting in the loss of the teeth and also the general health.

We, the American people especially, live fast and eat fast; that is, get the food into our stomachs as quickly as possible, regardless of the consequences; enough that we can say that we have been to dinner. We are too lazy to exercise the temporal and masseter muscles, and too dainty to eat plainer and coarser foods. If the peridental membrane were strong and full of life, and would be kept so by exercise, it would be next to impossible for any disease to invade it.

Peridental atrophy, like all other diseases, has its cause, and this cause produces only atrophy primarily, for no cause can produce but one primary effect. If the cause is removed, it necessarily follows that the effect will disappear, for on cause is effect dependent. To remove the cause of a disease does not imply that the result—destroyed tissue—will be replaced, but it implies this, that when the cause is removed, the continuation of the disease with its destructive process is stopped.

Treatment: In the last paragraph of a paper read before the Illinois State Dental Society by Dr. A. H. Peck, of Chicago, and published in the July number of the DENTAL REVIEW, is sounded the keynote of a successful treatment of this disease; and by a successful treatment I do not mean to simply relieve any discomfort or suffering, or to arrest the progress of the disease for a short time only, or to stop the pyorrhoea, or to allay the inflammation and relieve the congestion of the gingivæ, but by a successful treatment, or cure, I would have you to understand that there must be a restoration of the gums to a healthy condition, and with this return of the gums to health there must be a cessation of the absorption of the alveolar process, and there must also be a discontinuance of the atrophic or gangrenous destruction of the pericementum, not for a week, not for a month, and not for a year, but for years. May we not expect that the disease will never return? Let us hope for it, let us work for it.

That there will be a restoration of the wasted membrane, absorbed process, or receded gums, is more than we can expect, notwithstanding opinion to the contrary.

There is such a great variation in the phenomena and conditions of this disease that it is quite impossible to lay down any definite procedure in the surgical or medicinal treatment. There are many things to be taken into consideration; some of which are the extraction of teeth, excision of roots, obliteration of pockets and toning of the general health, etc. These are matters of great importance when

a cure is expected. If there are salivary or serumal deposits on the teeth, they, of course, should be removed, but never remove deposits if there are none to be removed. This last clause may seem to the reader to be paradoxical, but I think by a little explanation you will see that it is true in fact. There were and still are dentists who, in treating this disease, take it for granted that there are deposits on the roots and make an effort to remove them, and in so doing remove portions of the cementum. I know this is true, for I have done it myself, and I am not the only one, for I have seen others do the same thing. We were not to blame. We had been taught that deposits caused the disease, and the disease being present, there must necessarily be deposits. And we were also told to first scrape the roots, removing the deposits. It seems to me that our instructions should have been this, "if you find deposits on the crowns or roots remove them." Usually when serumal calculus is found on the roots it is in little scale-like patches, and not covering the entire exposed root. Sometimes, however, it is found covering the entire portion of the tooth covered by the free margin of the gums, and may even extend upon the root.

After all foreign substances have been removed, requiring instruments, and other details have been looked after, the next in order is the medicinal treatment. This should consist in the use of agents which are germicidal, stimulative and astringent. Alkaline preparations may or may not be used, according to the conditions.

The medicinal treatment from the hand of the dentist should be continued for some time, using your own judgment, according to the severity of the case. Constant care with a brush and mouth washes is of inestimable value, and should not be neglected.

The next thing in order, and upon which rests our hopes of a permanent cure is this, that the teeth must be given hygienic exercise. If this cannot be accomplished in the mastication of food, it must be obtained in some other way. This may be accomplished in the systematic daily use of the teeth in chewing some substance which will not wear or otherwise injure the teeth. We resort to hygienic exercise to develop and prevent atrophy of the muscular system. Let us do likewise to develop and prevent atrophy of the peridental membrane. The manual laborer does not need gymnastic exercise, for the nature of his work will produce all the required results of such exercise; and neither will we need this exercise for our teeth if we will use them for the purpose for which they were made. I believe

that upon the hygienic exercise of the teeth, and thus giving natural life, strength and vigor to the pericementum, alveolar process and gingivæ, rests our hope of preventing the wasting diseases of these tissues and their ultimate cure.

The cure of this disease by extracting and replanting is just about as logical a procedure as it would be to attempt to cure pneumonia by removal of the lungs. In the one case it means the loss of the tooth sooner or later, and in the other the undertaker would undertake to dispose of the surgeon's blunder. In extracting the teeth we have cured the disease, for we have destroyed the remaining membrane not destroyed by the disease; and, therefore, the disease cannot exist with absence of the peridental membrane. This operation is like many others performed by doctors; curing one disease by creating another worse than the one cured.

Seemingly no two are agreed upon the cause of this disease, so how can we intelligently and successfully treat it?

All diseases have their causes and their cures, and this one is no exception.

Who will be our benefactor? Some one is to be. Will it be you, old dentist, will it be you, young dentist, or look we for another in the generations yet unborn? I hope it will not be necessary to wait that long. We need you *now*.

SOME NEW USES FOR CHLORETONE IN DENTISTRY.*

By C. H. OAKMAN, D. D. S., DETROIT, MICH.

My attention was first called to the utility of chloretone in dentistry about a year ago. Since that time I have been using the drug, with uniformly satisfactory results, in a variety of cases in which a local anesthetic and antiseptic were indicated. Although I have been very favorably impressed with the action of chloretone as a local anesthetic, particularly for extracting, I find that in selected cases its action is much slower than is that of cocaine.

The fact that chloretone possesses antiseptic and local anesthetic properties suggested the idea to me that it might be utilized as a preservative of the aqueous solution of cocaine. I have the pleasure of announcing that I have found a cocaine solution saturated with chloretone to be perfectly satisfactory, since it keeps indefinitely. Moreover, I have reason to believe that chloretone may be used

*Read before the Detroit Dental Society.

as an excellent substitute for nitroglycerin, which I have been using heretofore to prevent unpleasant effects from cocaine.

My purpose, however, in writing this paper is not so much to call attention to the use of chloretone as a local anesthetic in extracting, but to relate my personal experience with the drug in other fields in which, to my mind, its action is of greater importance to the dental profession.

CASE I. The first case which I will report was that of a young lady who called upon me, suffering from neuralgia, the attacks of which had been periodic. The patient had received very little benefit from various kinds of treatment, and I found upon investigation that the lower right first molar showed signs of tenderness. I made a diagnosis of ossified pulp, administered gas and penetrated the pulp chamber. Only the very slightest sign of blood could be observed. Upon regaining consciousness the patient was almost frantic with pain. I applied rubber dam and used a 2 per cent solution of cocaine, and afterward a saturated solution, with no effect whatever. As the patient had been suffering so much pain for at least half an hour, without the slightest prospect of relief, she begged me to extract the tooth at once. The pain was so intense that it was impossible to produce anesthesia for the purpose of extracting; accordingly chloroform was administered by her family physician and the tooth was extracted a few seconds later.

When the patient recovered from the chloroform I found, to my surprise, that the pain was as great as it had been before and it was necessary for her relief to administer a hypodermic injection of one-eighth of a grain of morphine, which was repeated twenty minutes later without relief. I then prescribed one-fourth grain of codeine every two hours, for eight hours, at the end of which time, relief not having been obtained, I administered another hypodermic injection of one-eighth grain of morphine.

Despite the anodyne treatment, the pain continued for four days, during which time it was so severe that the patient was unable to leave her bed. Upon the fifth day she was brought to my office in a carriage. The cavity was curetted and syringed with a mixture of equal parts of witch hazel and hot water, and packed with cotton saturated with chloretone solution, which had been heated in a test tube until it was as hot as the patient could bear it. My object in using the chloretone solution hot was based upon the fact that

heat seems to facilitate its action. In less than ten minutes the patient was free from pain for the first time in five days.

Since that experience, I never fail to place in the tooth socket a pledget of cotton immersed in the hot, aqueous chlorethane solution, particularly if there be any pain after extraction, and more especially when there has been an acute abscess, or after removal of necrosed bone. The operator need have no fear in permitting his patient to leave the office with the chlorethane in the tooth socket. We all well know that we cannot have the same sense of security after the use of cocaine, for we all realize too well how frequently we meet with personal idiosyncrasies in connection with the use of that drug.

I was very much interested in a paper by Dr. J. S. McDonald, of Zacatecas, Mexico, entitled "Chlorethane in Pyorrhoea Alveolaris," which appeared in *Dental Clippings* for December, 1900. Doctor McDonald reports three cases of this obstinate disease in which he was able to effect perfect cures in periods varying from eight to twenty-five days. In summing up his results the author says: "I have treated twenty cases with chlorethane, and all have been cured—some with two treatments and some with ten—the time ranging from eight days to five weeks, but usually about twenty days. I was led to use chlorethane as a dressing on account of its antiseptic and local anesthetic properties. All dentists know how hard it is to cure pyorrhoea alveolaris, and there are some who say it cannot be cured without first extracting the affected teeth. If chlorethane be given a fair trial I am sure it may be the means of saving many a tooth."

I wish also to add my testimony in regard to the efficiency of chlorethane in the treatment of pyorrhoea alveolaris. It permits one to continue the operation of removing deposits from the roots of the teeth as long as possible, without fear of toxic effect. During the period of treatment it acts as a powerful antiseptic as well as a local anesthetic, both of which effects are desirable in the treatment of this disease. A résumé of some of my cases may prove interesting to the members of this society.

CASE II. A young lady, twenty-five years of age, who had undergone considerable treatment for pyorrhoea, came to me for advice and treatment. I found the lower incisors quite firm, but with some pus at the cervix and some swelling of the gums, especially upon the lingual surface. The margins of the gums were of the dark red-

dish color so often found in pyorrhea. I applied a hot aqueous solution of chloretone, and after twenty minutes was able to reach almost to the apex of the roots with a thin scaler. After one hour's treatment with the chloretone solution I placed strands of cotton, immersed in the same solution, around the teeth and as near to the apex as possible, allowing it to extend to the gum margin, and including the four lower incisors. This treatment was continued three times a week for three weeks. No pus was present after the first week, and the gum tissue has now become firm and the circulation is very much improved.

CASE III. Upper left lateral incisor in a lady fifty years of age. Pyorrhoea was very marked, the gum tissue being soft and discolored. The treatment was practically the same as in the previous case and, I am happy to say, the results were similar. About six treatments in all were given in thirty days. There was complete absence of pus and the gums were in a perfectly healthy condition when the patient left the city.

CASE IV. A young man, eighteen years of age, who had a tendency to hypertrophy. There was considerable pus about the crevices of the six anterior lower teeth. This case bore some resemblance to those we occasionally see in the aged. In fact, at the time of his first visit I had made up my mind that the case was a hopeless one, and accordingly did not arrange another appointment. Subsequently, after due deliberation, I sent for the patient, determined to see what chloretone would do for him. I treated him five times, continuing the application of the chloretone solution about an hour at each sitting, and removing every particle of deposit that I could reach. In thirty days from the time treatment was begun I noted a very great improvement in my patient, to such an extent that I did not find it necessary to treat him further.

My attention was called not long since to another use for chloretone in the field of general anesthesia. I refer particularly to a paper by Doctor Hirschman, of Harper's Hospital, this city, published in the *New York Medical Journal* for December 15, 1900. Doctor Hirschman reports sixty cases in which ether or chloroform was given to produce general anesthesia. Half of these cases, or thirty persons, were given chloretone before the anesthetic was administered; and for the purpose of comparing results no chloretone was given to the other half. The author states that the amount of anesthetic required for the patients to whom chloretone had been

given was from one-third to one-half less than for those who did not receive chloretone. Of the thirty patients receiving chloretone not one was nauseated by the anesthetic, while of the thirty less fortunate patients twenty-four were nauseated and vomited; in some the nausea persisted for three or four days.

The experience of Doctor Hirschman suggested to me the propriety of testing chloretone in connection with the use of nitrous oxide gas, as a general anesthetic. I began by administering five grains of chloretone, half an hour before administering the gas, and I found its action very effective. For instance, it is much easier to anesthetize a patient who has had a dose of chloretone, and only one-half to two-thirds of the usual amount of gas is necessary to produce complete insensibility.

On one occasion I attempted to extract several teeth for a young woman, but was unable to produce anesthesia. A week later I made a second attempt without any better result. At the time of the third trial I gave the patient five grains of chloretone, half an hour before I began to administer the gas. Complete anesthesia was produced in a few moments, and the patient remained quiet throughout the operation. When she recovered she stated that she was thoroughly pleased with the result. This patient was very nervous and dreaded to undergo the ordeal. Now she tells her neighbors what a nice thing it is to take gas in the "new way." I have had splendid success in handling nervous patients since I adopted this method of producing anesthesia, and use it now wherever indicated.

I know of no better remedy for odontalgia than chloretone dissolved in oil of cloves. Twenty-five per cent of chloretone will make about a saturated solution. The well-known sedative effect of oil of cloves, combined with the local anesthetic and antiseptic action of chloretone, makes this combination particularly effective, and I predict that if it is once used it will never be laid aside. In my experience, it is equally valuable in the treatment of root-canals, when used with essential oils.

Chloretone is especially valuable when we wish to treat the pulp canals in the anterior teeth, without discoloration, which is an unpardonable sin in the eyes of the profession. Oils of eucalyptus, wintergreen and sassafras may be used in these cases and will be quite as effective as the oil of cassia, when combined with the chloretone in a saturated solution.

Since I began to write this paper a few weeks ago, I found it

necessary to have the roots of one of my own lower molars extracted, on account of the existence of a blind abscess. I suffered considerable pain after the removal; in fact, for three days it was nearly constant. I applied camphor and chloral, campho-phenique, and cocaine. Antikamnia and codeine compound were taken without effect. Nothing gave me relief until I applied chloretone. I had experimented previously on others, but to be obliged to experiment on myself was something of a novel experience. When I say that the chloretone acted like magic, that statement about covers the case. Since that moment I candidly think more of chloretone than ever, for that was a genuine, practical demonstration. And although I found it necessary to apply the chloretone every hour or two, I was thereby enabled to follow my daily routine of work without much inconvenience.

During the last two months I have operated upon five antra, without using a general anesthetic. I relied entirely upon a local anesthetic, consisting of a mixture of cocaine and chloretone. The operations were not entirely painless, it is true, for I made liberal openings in each case. When I had finished using the drill the patients complained of terrible pain, stating that they were hardly able to endure it. In each case I immediately placed a large plug of cotton saturated in a hot, aqueous solution of chloretone near the floor of the antrum, completely filling the wound. In each instance the patient was composed and was freed from pain in from two to three minutes. Six physicians were present at the five operations, and each of them spoke in the highest terms in regard to the results accomplished with this remarkable drug.

In the treatment of painful ulcers of the mucous membranes chloretone is a very effective anesthetic when applied before using silver nitrate; my observation is that it lessens the pain very materially. I have also found it very useful in those cases in which the gum tissue is highly inflamed about a third molar, before pus has formed, and while the condition is still most painful. Instead of resorting to the use of the knife, which often aggravates the inflammation, in such cases most marked results will follow an application of chloretone. I recently had occasion to treat a patient suffering from a condition similar to that which I have just described. He had called upon two dentists, each of whom had made an incision, causing him great pain. As it was now my turn to treat him, I proceeded to do so, not with a knife, however, but with this drug. This

patient, who had been unable to attend to his duties, was relieved within five minutes after the application of chloretone; I supplied him with a test tube and a saturated solution of chloretone as he was leaving my office, by the use of which he was able to go about his business as usual.

So, gentlemen, in the light of these facts, can any dental practitioner afford to do business without chloretone?

In a paper read before the Central Dental Association of Northern New Jersey, March 19, 1901, by L. Greenbaum, M. D., D. D. S., of Philadelphia, the statement occurs that chloretone possesses very little if any anesthetic power; while as a general hypnotic it is useful. The author says, further, that many of his confrères have used chloretone and found it useless.

If this has been the actual experience of the writer of that paper, I wish to state that, in my opinion, he either did not give chloretone a sufficient trial, or he did not know how to use it, failure possibly due to inability to make a saturated solution, or not allowing sufficient time for the drug to act. A number of dentists and physicians have witnessed demonstrations of its anesthetic and antiseptic properties to their entire satisfaction, and they are, to-day, strong advocates of the use of the drug.

DISCUSSION.

DR. T. J. COLLINS: We should give a drug a thorough test before arriving at final conclusions. In discussing a paper of this kind all one can do is to give his own experiences or state his opinion in cases in which he has given an actual trial. Then, by comparing notes, we can derive some benefit from such discussion. In extracting I must confess that I have not obtained the anesthetic effects claimed for chloretone. I do use it where I fear to use cocaine. Where there is pain after tooth-extraction, chloretone used as he suggests is certainly beneficial. The danger attendant upon the use of cocaine does not follow the application of chloretone. There is one use of the drug that the doctor did not touch upon. It is a treatment that dentists do not use sufficiently often. I refer to the preparation of patients who suffer great pain while having cavities excavated. The patient should be treated for a week prior to operation. With reference to Doctor Hirschman's experiments at Harper's Hospital, everything indicates that we all can obtain the results he obtained by giving chloretone before chloroform, ether

or nitrous oxide. In the treatment of pulp canals, the use of chloretone is undoubtedly effective.

DR. J. T. DEGEL: I have used chloretone in practice with varying results. It is more soluble in warm than in cold water; as the solution cools the chloretone is deposited, and the question arises, have we a one per cent solution or not? It is necessary to filter the solution, lest the crystals clog your needle. I think chloretone is indicated as a local anesthetic where cocaine, eucaine or similar local anesthetics cannot be used, owing to the physical condition of the patient. I have found that in five-grain doses chloretone is a safe hypnotic, allaying neuralgia and producing refreshing sleep, without untoward after-effects. In cases of odontalgia the dry crystals may be introduced into the cavity and retained in place by a pledget of cotton dipped in sandarac varnish; the drug will act very effectually until more permanent treatment can be introduced. It is a very good plan to mix chloretone crystals with carbolic acid when applying arsenic for devitalizing the pulp. Having some crystals handy, dip your pledget of cotton in the carbolic acid, then take up your arsenic, and lastly the crystals on the carbolized cotton, and apply them to the exposure, sealing in any way you desire. You have the satisfaction of knowing that your patient is comfortable while the devitalizing process is going on.

DR. J. E. ROCHE: I have a solution of chloretone and cocaine which has been standing for six months; it is apparently just as clear and active as on the day when it was prepared. I also know of some eye specialists who use it in the same form, and they claim that the cocaine does not deteriorate.

DR. J. L. YOUNG: I had occasion to try chloretone in a case in which there was a general hypertrophy of the gum throughout the entire mouth, with a slight exudation of pus around many of the teeth. I found that the drug had a favorable effect in this case.

DR. L. C. MOORE: I had occasion to take a patient to Doctor Oakman. After he had been put under nitrous oxide gas he behaved pretty badly. Upon recovering consciousness he complained of a very severe pain in the tooth-socket, but an application of the aqueous solution of chloretone quieted him right down.

DR. OAKMAN, closing the discussion: This paper was presented in order to call your attention to some new uses for chloretone in dentistry, and not for the purpose of provoking a discussion upon its merits in extracting. Topically, the aqueous solution of

chloretone is always used as hot as the patient can stand it, since the efficiency of the drug is increased by applying it in this manner. I do know that chloretone in the strength of about three and one-half grains to the ounce, with one per cent of cocaine, is very efficacious in extracting. Doctor Houghton, lecturer on pharmacology in the Detroit College of Medicine, says: "Chloretone is a very satisfactory preservative of solutions of cocaine. Solutions of this kind have been kept for nearly a year and still remain sterile, notwithstanding the bottle has been frequently opened. They are permanent and always ready for use. Chloretone and cocaine act together as local anesthetics; that is, they produce local anesthesia on the terminations of the sensory nerves when they are brought in contact with them by subcutaneous injection. As shown by experiments on the lower animals, less harmful results occur from the absorption of cocaine when considerable amounts of chloretone have been administered. Presumably the stimulating action of the cocaine is neutralized by the depressant action of the chloretone upon the central nervous system. The importance of this fact has not been demonstrated clinically, nor has it been determined by animal experiments whether the small amounts of chloretone contained in an aqueous solution of cocaine are sufficient to be of value." This suggests that chloretone may be used with cocaine, instead of nitroglycerin. I have used chloretone quite successfully in cavities, although I have not mentioned it in my paper. Chloretone in connection with alcohol or ether acts very well. In odontalgia a 25 per cent solution of chloretone in oil of cassia or other essential oils is very efficient. I use it almost entirely. I know that when we lance the region of a third molar, in tissue generally inflamed and before pus has formed, an inflammation is excited that will cause the patient more pain. I would like to suggest this plan: Apply the aqueous solution of chloretone—and apply it hot—all around the gum margin and a little below the surface of the gum, and it will relieve almost any pain in that region within a few minutes. I do not think you can have the success with cocaine that you can with chloretone. Have the chloretone solution hot, as hot as the patient can bear it. You have to use cocaine cold, ordinarily, for if it is heated it decomposes. Topically used, chloretone is much more active than cocaine. About three weeks ago I had occasion to open into an antrum. The patient had suffered considerably. Two physicians were present, one on each side of the chair. Before operating I had used an aqueous solu-

tion of cocaine and chloretone, hypodermatically. Although the effect of the drilling was very painful, within less than a minute after the hot aqueous solution of chloretone alone had been applied the patient was absolutely free from pain. The physicians were utterly astonished. I have had an aqueous solution in my office for five months, and it has not crystallized. It is about a one per cent solution. You must triturate chloretone very thoroughly before dissolving it. If it is combined in the proportions which I have described you can filter it.

DR. M. E. STAFFORD: In what dose is chloretone given before the administration of a general anesthetic?

DR. OAKMAN: In doses of five to twenty grains.

DR. STAFFORD: Do you give it in aqueous solution?

DR. OAKMAN: No; in the crystalline form. I think I have given chloretone a sufficient test. I became enthusiastic over it after one or two trials, and I think now that it is one of the most useful drugs I have in my cabinet.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Schiller building, April 2, 1901, with the President, Dr. George W. Cook, in the chair.

Dr. L. Blake Baldwin read a paper on "Oral Manifestations of Syphilis."

DR. ELLIOTT R. CARPENTER was asked to open the discussion. He said:

Mr. President: I think we owe a debt of gratitude to Dr. Baldwin for coming here this evening and giving us such an admirable paper. Dr. Baldwin sent me a copy of his paper; I read it carefully, and although I have been interested in this subject for the last few years, I find that it is difficult for me to discuss the paper intelligently. I would like to begin by asking him this question: Why a woman will notice the first manifestation of this disease in her mouth? Why may she not notice the chancre somewhere else? I had been in practice not more than six months when a young man came to my office for professional service, and after operating on him for two hours he thought possibly it was best to inform me that he was suffering from syphilis. I had never come in contact with a case of syphilis at that time. It is needless for me to say that I was startled beyond measure by his statement. I was afraid of myself for a week or more. I then began to read up on this subject and to consult with physicians. I imagined that I had all sorts of things myself. This case frightened me into beginning to make a study of syphilis and its oral manifestations. After I had looked over some medical works on this subject for a few days and had consulted physicians in regard to the disease and its manifestations in the mouth, I found that I stood on ground that was not very dangerous, for the reason that there were no mucous patches in the mouth. It has been said by some of the best syphilographers that syphilis is not infectious through the medium of the saliva unless there are mucous patches present. In other words, there may be a chancre on other portions of the body, or there may be disease in the blood, but the saliva of the patient is not infectious unless there are mucous patches present.

In regard to the matter of carrying infection by the finger nails, scratching, etc., I take this precaution when I am working for those who have syphilitic lesions in the mouth: After I scrub and scour

my hands and fingers with bichloride of mercury solution, I scratch my finger nails full of soap, using for this purpose ordinary tar soap. I do not know whether it has any antiseptic properties or not, I rather doubt it. But soap fills the nails thoroughly, so it is possible that there is some virtue in it. It is certainly of value if there is any abrasion of the skin underneath the nail.

When I presented a paper on this subject a few years ago before the Odontological Society, I was asked: Should we refuse to operate for a syphilitic patient? I took the ground that most decidedly we should not, any more than a surgeon or a physician should refuse to treat such cases. If we have a knowledge of the disease and its lesions, I see no reason why we cannot operate on such patients and reduce the danger to ourselves and of infecting other patients to a minimum by adopting the proper precautions.

About two years ago I had an interesting case of a young man who had been in my practice for three or four years. I should judge he was about twenty-five years of age. He had a chronic crack in his lower lip which looked as though it was a good point for inoculation through the medium of syphilitic virus. He was an athlete, and he was always trying those lung testers that are to be seen at the L road stations. The first thing he knew he had some of the systemic symptoms of syphilis, fever, etc., and he was unable at that time to diagnose his case. Ultimately he had an initial lesion on the lip at the site of the crack, and later on developed mucous patches in the mouth. He began to take powerful medicines; his teeth weakened, being of the soft chalk quality, so that the iodides played havoc with the man. His mouth was very sore and tender from the presence of mucous patches; he neglected to use the toothbrush, and the result of course was the development of caries of the teeth. He ultimately came to me and gave the history of his case. I questioned him closely as to every possible means of infection, and knowing him so well I had every reason to believe what he told me. There is no reason why I should not believe that he contracted syphilis through testing his lungs with these lung testers.

I temporize in all cases of severe caries that are sources of irritation to the mucous membrane of the mouth with cements and things of that kind, using always the rubber dam, and a set of instruments which I have for these cases exclusively.

A number of years ago I attended the clinics of Dr. Baldwin twice a week for six months, and during that time I probably saw

between four and five hundred cases of syphilis, and of the number I examined personally myself, there were about one hundred who had mucous patches in the mouth, and it has occurred to me since, do our dental colleges give sufficient attention to the clinical exhibit of such mucous patches? Speaking for myself, I saw nothing of the kind in the clinic-room and heard nothing of it in lectures when I was a student. You will be surprised, if you will look over the list of text-books, to find how little is said on this subject. I have a number of cases of oral syphilis referred to me every year by physicians in this city, who know that I have been and am more or less interested in this subject. I take the cases and coöperate with them. I have seen some cases in which there were not only mucous patches in the mouth, but where the mucous membrane was badly irritated by broken-down and ragged edges of teeth. When these patients are sent to me I make it a rule to make appointments at the end of the day when I am through with other work, then taking the necessary precautions to protect myself and family and practice, I go to work on these cases fearlessly.

I am very grateful to Dr. Baldwin for having exhibited so many interesting cases to-night. I think the Society owes him a vote of thanks.

DR. C. E. BENTLEY: This is a very interesting subject to dentists. While we have had a number of papers presented to the society in the last eighteen months, I doubt whether we have had a paper that is more instructive and interesting than the one Dr. Baldwin has presented to-night. If I had seen nothing else than the mucous patch on the end of the tongue of one of the patients exhibited to-night, I believe I would have been amply repaid for attending this meeting. This mucous patch very closely resembled an abrasion of the skin, and yet we have been told that it is highly infectious.

I would like to have Dr. Baldwin tell us the fundamental differential characteristics between a mucous patch and a localized stomatitis, or an aphthous condition of the mouth which so closely resembles a mucous patch. That differentiation would be of value to us. It is not every patient we have in the dental chair who will receive our inquiries regarding his history with good grace. A woman, for instance, might resent such inquiries as impertinence on our part, particularly where we may be searching for some collateral history that will justify suspicion, and if there be any known law by which we can differentiate a mucous patch from an abrasion of the mouth, it will be very valuable indeed to us. Of course, as Dr. Baldwin has

said, the swelling of the glands all over the body, and particularly the submaxillary and cervical glands, will justify our being suspicious, but this information is not always reliable or available. If these patches teach us any one thing, they teach us to thoroughly examine all strange patients that come to us. In this connection I do not believe the wholesale assault, if I may use such a harsh term, made by the essayist on the profession is justified. I believe that there are dentists who are exceedingly careful about this disease and its manifestations, and I believe that there are dentists who know how to protect themselves and their patients. Personally, I use certain precautions in making an examination of every patient's mouth, whether that patient comes to me in a gunnysack or a sealskin, for a sealskin sack is no guarantee against syphilitic infection. First of all, I have a little circle of bichloride gauze which is wrapped around my finger before I proceed to make any close examination. This little piece of gauze wrapped around my finger is agreeable to the patient and does not impair tactile sense in examining the mouth. Ostensibly I am examining the teeth, but in reality I examine the mucous membrane of the mouth. I do not say that I am always able to detect a mucous patch, for I think the mucous patch on the end of the tongue of the patient we saw to-night would deceive me. However, I am glad I saw it, because it will make me all the more guarded in the future. With my bichloride gauze I examine the mucous membrane of the mouth, and with it can reasonably protect myself. If there be any suspicion, I try to elicit a full and complete history from the patient. As Dr. Carpenter has said, there are a few physicians in this city who send me syphilitic patients to have their teeth cleaned and attended to, and the first thing in the treatment of a syphilitic patient is to clean the teeth. I use rubber fingers when I have a syphilitic patient to deal with, made by the Akron Rubber Company. I use with those five rubber fingers a set of instruments designed or laid aside for this purpose. I can work around, under and over with rubber fingers without any fear of infection.

The proper sterilization of instruments is one of the most important things that can come up for discussion. A good paper might be read to the society by some competent man on the proper sterilization of instruments. I should like some one to give me a distinct formula outside of carbolic acid for the sterilization of instruments.

I have had a little experience in treating syphilitic cases, and will

mention one case that will doubtless be of particular interest to you. The initial lesion was not recognized before a great deal of injury had been done, and the whole history of the case afterward became interesting. There are some of my professional friends who know of this case. A prominent gentleman in this city came to me, and I was in doubt as to whether his case was one of oral syphilis or pyorrhoea alveolaris. In my doubt I showed some timidity in asking the gentleman, on account of his standing, whether he had syphilis or not, and I sent him to a gentleman for diagnosis. The gentleman treated him for ten days, when the patient was returned to me as cured. A tooth was tied in the mouth with ligatures. When I released the ligature the tooth fell into my hand, and part of the alveolus came with it, and I point blank asked him if he had not been suffering from some specific disease. He replied: "Yes, two or three years ago." I asked him who had treated him, and he told me Dr. Hyde. I requested him to go to Dr. Hyde again. He did, and Dr. Hyde discovered that there was a destructive process of tertiary syphilis of the central and lateral incisors, which came away with the alveolus.

This is an interesting subject to us, and I believe it has taught me a great deal, and personally I wish to express my indebtedness to Dr. Baldwin for having presented these cases.

DR. A. W. HARLAN: One of the particular things with reference to syphilis is its surprises. Any one who is acquainted with the history of venereal diseases, and especially syphilis, must know that only one person in ten, or one person in twenty, in the whole United States, suffers from diseases of this kind, either hereditary or acquired. Most of us know that such diseases as tuberculosis, typhoid fever, etc., are far more dangerous to life than syphilis, and while here and there we have cases of malignant syphilis, yet out of the total they constitute a small percentage. I have been somewhat familiar with the venereal diseases for thirty years. It was my good fortune many years ago to spend several months in Vienna, Paris, London and other places, and while it is true that many persons are disfigured by syphilis, and that it is a communicable disease, yet the danger is minimized on account of the dread of the malady. In order to acquire syphilis we must have either an abraded mucous membrane or a crack in the skin which will permit the syphilitic virus, when brought in contact with it, to poison the organism. The mere contact, the mere exchange of saliva, and things of that kind,

do not ordinarily communicate syphilis. When a man goes around with a lot of needles in his mouth for the purpose of producing deformities on human beings, and carries those needles in his mouth and makes hieroglyphics on somebody else's skin, perhaps he will communicate the disease. People who acquire syphilis from kissing, from the use of pipes, from the use of cigarette holders, from the use of glasses and tableware, and things like that, constitute a small percentage. The most notable cases of syphilis, constituting from 95 to 97 per cent., are communicated by sexual intercourse, and, as Dr. Baldwin has said, because a person has a chancre it is no evidence that he has syphilis, because we have what is known as chancroid, and the differential diagnosis between soft chancre and hard chancre is one that any respectable dentist in this room ought to be acquainted with. I have been a teacher in dental colleges for twenty years in Chicago, and I have communicated the information to my classes that syphilis, according to Dr. Edward L. Keyes, while it is one of the most innocent diseases which is acquired by some people, yet they run through the whole course of it, recover from it, and do not know that they ever acquired it.

I want to tell you that syphilis is one of the hydraheaded monsters which is not going to decimate the human race, and while it is, in its malignant aspects, one of the most dreaded diseases, yet the diseases I have mentioned, such as tuberculosis, typhoid fever, etc., decimate the human race in far greater numbers than syphilis, because it is, as Dr. Baldwin will tell you, one of the diseases that is amenable to treatment. While the essayist exhibited several patients showing the ravages of syphilis, he did not present at the same time a succinct account of the various phenomena connected with the inception, the development, course and cure of syphilis. This is not a disease with which dentists are unacquainted. Dentists are not ignoramuses; they know something about the diseases that affect the mucous membrane of the mouth, and of the whole human economy, and I want to tell you right now, those of you who have not read the works of Van Buren and Keyes, Duhring, Ricord and various others that I need not mention, that while, if you acquire syphilis, at the end of twenty-one, twenty-two or twenty-three days you will have an eruption, and all that, still the medical profession is at fault because it has no systematic method of treating this disease, which at the present time is not known to be microbic. They have not isolated the microbe of syphilis, and while a number of surgeons have excised the initial

lesion, and have made subcutaneous injections of various forms of mercury and have given inunctions, yet the basis of our knowledge of this disease, which is a filth disease, is that it must run a certain course. Does typhoid fever run a certain course? Of course it does. You all know that, those of you who are acquainted with the literature of the present time. What is done by physicians? As soon as the chancre appears, it is dressed and treated with ointment. When the eruption occurs, they wait until the chill or fever passes away, then they begin a systemic course of treatment which lasts for a certain period, and then they say that the secondary period of syphilis has disappeared, and now the tertiary symptoms begin. As Dr. Baldwin will tell you, physicians are divided in their opinion as to whether the pus and secretions from the tertiary lesions are infectious or not. They are divided because they have not studied that phase of the question closely enough. I have had a large number of cases of syphilis in the thirty years I have been in practice in Chicago, and I have not yet seen a single case where any person acquired the disease from contact with the pus or the muco-pus from the so-called tertiary lesions. It is true, I may not have seen a sufficient number of cases, but by that time the syphilitic virus has spent itself, and it is incapable of infecting a person whose mucous membrane it comes in contact with, even when it is abraded. This dread and fear of syphilis is all right, and I am very glad to find that it is so firmly implanted in the minds of the laity. But I want to say that dentists and those who have listened to lectures in dental societies, that it is unnecessary to put on rubber gloves when the tertiary symptoms and lesions of syphilis are so apparently present, because unless you have broken skin you are not going to acquire the disease.

DR. BENTLEY: What would you do in the secondary stage?

DR. HARLAN: During the whole course of the secondary stage one is not liable to acquire syphilis unless he has broken skin or an abraded mucous membrane. But just as soon as what we call the tertiary symptoms have appeared, then there is freedom from infection. I have attended a number of dental societies and have listened to discussions on the virulence and poisonousness of syphilis, and I want to say that those of you who are not acquainted with the literature of the subject ought to be, because this is one of the diseases that it is your duty to acquaint yourselves with, because we have seventy millions of people in the United States, and supposing there are four millions who are suffering from acquired and inherited syphilis. You

ought to know something about mucous patches, about excoriations about the nose, lips, enlargement of the glands, etc. Those are simply the a, b, c's of it. The man who was presented with a deformed nose is not suffering from primary or secondary syphilis, but from tertiary syphilis. He could not communicate the disease to any one else in this room. You also saw another man with a large patch on the lower lip. That is no particular evidence that he would communicate the disease to some one else. It is in the primary and secondary stages of syphilis that the greatest danger lies, and that is the time when the greatest precautions should be taken to prevent any possibility of carrying infection from one person to another.

I never saw Dr. Baldwin before in my life, although I have listened to his paper with a great deal of interest and pleasure. I do not want you to be frightened by anything that he may have said, and I do not think he said anything very alarming about syphilis. I do not want you to entertain the idea that you are going to convey the syphilitic poison from one patient to another in the tertiary stage of the disease. It is understood, Dr. Baldwin, that the dental profession are thoroughly conversant with all methods of sterilizing instruments—absolutely. We yield nothing to any member of the medical profession or any other profession in our knowledge of the methods of sterilizing instruments, because that is one of the things we teach in all of our dental colleges from a, b, c up, and right straight through. It may be that there are men who do not sterilize their instruments properly. That is their fault, and it is not because instruction was not given them.

When we come to the tertiary manifestations of syphilis, then I simply say that so far the case is not proven. There might possibly be a single instance of infection conveyed during the tertiary stage of the disease.

With reference to the rubber dam, the scalers, the silk we pass between the teeth, the clamps we put on the teeth, the forceps with which we extract teeth, the files and saws, etc., I want to say that there is not a man in this room who uses a second time a piece of rubber dam or a piece of silk, polishing paper or cloth on another patient under any circumstances, because if he does—well, he is a scientific criminal.

DR. C. E. BENTLEY: While I was very much interested in Dr. Harlan's remarks in which he upheld the dental profession, still they were not wholly germane to the subject. I believe he stated that it

was a mooted question as to whether the syphilitic virus in the tertiary period was communicable or not.

DR. HARLAN: I said that it is not proven that the pus or secretion from the degenerated mucous membrane or soft tissues in the tertiary stage will communicate the disease known as syphilis to an innocent person.

DR. BENTLEY: According to that statement the question is as yet in doubt. I believe syphilographers disagree as to whether the virus is communicable or not during the tertiary stage. Granting that it is a mooted question, if we have a patient who has a mucous patch in his mouth, would it not be the safest thing for us to protect ourselves by exercising every possible precaution, in order that we may not be infected ourselves and infect others? As I have before stated, I use rubber fingers or rubber gloves. It is a simple method of producing immunity from inoculation, and I cannot see any objection to using them in cases where we suspect infectious disease or in which there are mucous patches in the mouth of a patient.

DR. J. N. CROUSE: I am a little skeptical about one feature of this question—namely, the danger of dentists contracting syphilis in working for afflicted patients. Occasionally we hear of an isolated case, but not often, and I think the essayist has exaggerated the danger somewhat.

DR. BALDWIN (closing the discussion): In reply to the question of Dr. Carpenter, if a woman has a chancre on her cervix, why does she not know it? The chancre is not painful; there is no irritation, no discharge, and I may venture to say that 90 per cent of the women who infect men with syphilis from having intercourse do it innocently. It is not their fault because they do not know that they are the means of conveying infection. A woman often does not notice the secondary eruption which usually precedes the formation of mucous patches. If you question many of these women they will say that they have not had any skin eruption at all, whereas on examination you may find the secondary eruption staring you in the face.

In reply to the question of Dr. Bentley as to the differential diagnosis between a mucous patch and stomatitis, I will say that it is very difficult to differentiate between the two. There is one thing, however, that you should look for, although you may not always find it, and that is induration around the mucous patch, which you do not find as frequently as in the patch of stomatitis. Then, you have the

glands of the neck, you feel for and determine whether they are enlarged or not.

Referring to the arguments advanced by Dr. Harlan, with all due respect to him, I must say that he went around the bush considerably. His remarks were not directed to the points or subject under discussion. I do not wish to be understood as trying to belittle the intelligence of the members of the dental profession regarding antisepsis or asepsis, because I know many of you have advanced ideas on those subjects. I tried to give you in ten minutes a few facts in a terse manner as I have observed them. I must agree in the main with Dr. Harlan regarding infection from tertiary lesions, because I do not positively know whether the tertiary lesions of syphilis are infectious or not, but the paper did not deal with the infectiousness of tertiary lesions. It dealt entirely with mucous patches. That these mucous patches are infectious we know to a certainty, and you as dentists should be able to recognize them when you see them in the mouths of your patients. I think I am right in saying that in the past your dental colleges have not given this subject the consideration that it deserves. I know that the only mucous patches that have been demonstrated in a certain dental college in this city have been demonstrated by myself, because I asked for an opportunity to demonstrate them to dental students. To illustrate how little some dental students know about the oral manifestations of syphilis, I will say that only recently a dental student consulted me who had an attack of gonorrhoea, and he wanted to know whether or not it would "run into syphilis."

With reference to the infectiousness of saliva, when the saliva passes over a mucous patch in the mouth of a patient I consider it more or less infectious, and I have good authority for that statement.

As far as the treatment of syphilis is concerned, I never tell a man that I can cure him. I try to do so, but I do not know positively whether I can cure syphilis or not. I do not want to have syphilis and its prevalence belittled, or that it does not amount to much. Dr. Harlan has contrasted it with typhoid fever and tuberculosis. You saw the man with his nose having been destroyed or eaten away by the syphilitic process. Personally, I would rather have typhoid fever and die than to have the face of that man. What are the results of syphilis unrecognized? You as dentists have the first chance to tell some one that he has the disease, and you can accomplish a good deal

of good in that way. As Dr. Harlan has said, have you read the books on syphilis and its ravages, particularly those of you who are teachers in dental colleges? What he has said regarding this disease tends to strengthen the arguments I have advanced. Let us take again the case of the man with tertiary syphilis and mucous patches. I want to say that the dentist who works in that man's mouth could not work in my mouth with the same instruments unless they were boiled and thoroughly sterilized. Even then, I would prefer to have the dentist use other instruments. Our knowledge of tertiary syphilis is not at all satisfactory. It is indefinite, and we do not know very much about what we call secondary or tertiary syphilis. That is true as far as the stages of syphilis are concerned. But you have seen a patient with so-called tertiary syphilis in whom destruction of the bones of the face has taken place, in whom there are also mucous patches, and I believe those patches are infectious. I do not believe that the world is getting any worse. I am interested in this subject and have been for the last seven years. I have under my observation and care from 100 to 160 cases a week of the disease at the County and Samaritan Hospitals. There is one patient in the latter hospital at the present time who has the most malignant form of the disease. She has mucous patches in the vagina, a Hunterian chancre on the cervix, mucous patches in the mouth and on her lips. She has had intercourse in the last ten days with ten different men—men who think they are getting a good thing for nothing, and I stand back like a pawnbroker and wait, because I feel absolutely sure that some of those men will have abrasions. If any of these men should come to my office, the first thing I would do would be to send them to a dentist in order to have their teeth cleaned and put in good condition, because they can stand three times the dosage of mercury I would want to give them without causing salivation and obtaining results accordingly.

The brilliant discussion of Dr. Harlan shows that he is very familiar with the literature of the subject, and that really he ought to be a syphilographer. From his knowledge of the subject and the interest he has taken in the work, one is led to believe that he has thoroughly studied the different phases of it.

FOURTEENTH ANNUAL BANQUET OF THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

The fourteenth annual dinner of this Society was held at the Sherman House, Monday evening, January 21, 1901.

At 9:45 p. m. the meeting was rapped to order by Dr. Thomas L. Gilmer, who delivered the following

ADDRESS OF WELCOME.

Gentlemen of the Odontographic Society and its Invited Guests: It is my privilege and pleasure to welcome you to this, our fourteenth annual dinner. This is the one meeting of the year in which we lay aside all scientific subjects and give ourselves up to fraternity and good fellowship. One year ago you installed me into the office of the presidency, having at the annual meeting, one month previous, taken advantage of my absence to elect me your chairman. At the time it seemed to me, as the Odontographic Society is the society of the young men of the profession in the city, it would have been more fitting to have selected some one of fewer years to have presided over you. On this account, and for other reasons, I somewhat reluctantly accepted the honor which you had so generously bestowed upon me. I have served you to the best of my ability, and wish now to heartily thank you for having placed me in such close relationship to the young blood of the profession. We have had a year full of interest. The papers read have been good, and the discussions on them instructive. During the year there has been no discordant note, and you have at all times been very considerate of me, and now that I lay down the badge of office, I wish to express my appreciation for this. I am especially indebted to your worthy secretary, and to the other officers, for their cordial support. Since the Odontographic Society is composed so largely of young men, many of whom having already achieved distinction, we may confidently expect even greater findings for it in the future.

I trust that each one of you will have the best possible time this evening, and that our meeting together and the brotherly greeting may cause you to make new resolves for higher professional attainments for the new century on whose threshold we have just entered. (Applause).

DR. GILMER acted as toastmaster.

THE TOASTMASTER: We have been fortunate in securing one of our own members to respond to the toast, "The Nineteenth Cen-

ture;" a man who is eloquent, learned, broad and aggressive. He likes to look backward as well as forward, and I take great pleasure in introducing to you, Dr. C. E. Bentley. (Applause.)

DR. BENTLEY then responded to the toast, "The Nineteenth Century."

"Close up his eyes and draw the curtain close,

And let us all to meditation."—(Henry VI.) Shakespeare.

Mr. President and Members of the Odontographic Society of Chicago: The history of the nineteenth century is a remarkable one, and he who would attempt to render an estimate of its achievements in the time allotted to me would be foolish indeed. It will suffice for me to give a cursory glance at this mighty century in passing. The sentiment says: "Close up his eyes and draw the curtain close, and let us all to meditation." Since the nineteenth century is dead, let it have the benefit of the maxim as far as possible that nothing but good may be said of the dead. But no one should carry that rule so far as to ignore such of its faults as will serve as useful monitors to its successor. For the nineteenth century was fraught with successes and failures—with honor and dishonor—pride and shame—noble and ignoble deeds. But though some of the faults of the nineteenth century may be recalled, this need not be for lack of opportunity to praise its record. For in most directions the old century has left a legacy of progress.

In science, art, literature, theology, medicine and statecraft—each has contributed its quota to the common weal and the legacy has been one of progress. But the century will be judged in the future by its contribution to the fundamental principles that make for human justice—human rights—human kinship.

Many illustrious names will illumine this page of our century's history. The history of past ages has been busy in making religions for men. The history of the nineteenth century has engaged itself concerning the rights of men. I predict for the twentieth century that these terms will be interchangeable. For what religion is worthy the name that disregards the natural rights of man?

The factors that have been most productive along this line, to my mind, are science, philosophy, literature, sociology, theology and statecraft.

It was a modest Englishman who gave to the world in the middle of the nineteenth century a theory that has since been demonstrated into a fact that is largely responsible for the thought that has been

provoked along these lines. The doctrine of evolution shows a kinship to all the cosmos—there is a relationship between the man and the horse that carries the man, and the oats the horse eats that enable the horse to carry the man, and so on throughout the animal kingdom. The doctrine of evolution, the law of the survival of the fittest was given to the world by that great naturalist and modest gentleman, Charles Darwin, and its announcement marked a new epoch in the history of civilization. This doctrine formed a basis upon which was built a philosophy, the scope of which has not been equaled since the dawn of history. The capstone of that philosophy is embodied in a work called *Justice*, in which the rights of man are dealt with, and the formula of justice is a religion.

The law of amity and not of enmity was born and a new era was created. Herbert Spencer was the man who gave this thought to the world and it has been the better for his having lived, and the nineteenth century claims him as its own.

These men form two supports of the tripod upon which rests the structure of liberty which was built in the early part of the nineteenth century. What name shall form the third support to complete the tripod? America can answer in her own way. What name is more fitting to fill this third place than the one, who, the farther we get away from him, the better our understanding of him? The more we study him, the greater we love him—the greater the perspective, the grander his proportions. The apostle of justice, the emancipator, the torch-bearer of liberty. One of the grandest characters of the nineteenth century was Abraham Lincoln. (Loud applause.)

In the theological world I regard Theodore Parker one of the great historical characters along these lines. He is responsible for the tendency, of late years made so manifest, toward the disintegration of theology and the unification of religion. The fatherhood of God and the brotherhood of man in fact was his theme and to which principle his life was attuned.

In literature, Ralph Waldo Emerson, the sage of Concord, has keyed the strings of his harp to sing the songs of liberty, justice and truth in such a way that the strains will permeate the ages to come because they are eternal.

In that new and powerful science, sociology, hardly out of its swaddlings as yet, a new and alien name has come to us; one we have learned to love; one with whom we will quarrel no doubt, but one with whom we will have to reckon; one who it is no exaggeration to

say has forced his thought upon the thinking world more than any one in the latter part of the nineteenth century. Sociology, that branch of philosophy which treats of human society must of necessity deal with abuses imposed upon society by members of its body. In the scientific adjustment of the abuses of society, sociology has to deal. Who can give the formula? The lowly Nazarene gave us one twenty centuries ago. But we have drifted from those moorings. Who can give us another to meet the requirements of to-day?

Count Tolstoi, a Russian Count of noble birth, reared in the lap of luxury, has given a formula which has attracted the attention of the reading world and impressed itself more upon the world than any other thought of the latter part of the century, and is responsible for the wonderful renaissance in these latter days on this subject of human rights—and human justice. So in accordance with my former declaration—that the century will be judged by its contribution to the cause of human freedom—and human justice, I think that while many names will live, that these six, Darwin, Spencer, Lincoln, Parker, Emerson and Tolstoi have become immortal. (Applause.)

But while this life-giving principle has received such great impetus in the nineteenth century, and while men have lived their whole lives in its unfoldment and sacrificed their lives for its advancement, what was the condition of this principle at the close of the century? What are the tendencies to-day? Without any disposition to enter here into a discussion of the facts, am I not justified in saying that the beauties of our principle are bedimmed by the growing greed of men and nations? Have not the lust of power, social, political, the greed of wealth, national and individual, so benumbed the finer sensibilities of men in this commercial day that all over the civilized world the strong are preying upon the weak, and the rights of man subordinated to the greed of gain regardless of the justice or injustice of the claims involved? Wars and rumors of wars have been the result, and Peace, that condition of nations that makes for the best that is in man, has been rudely set aside and grim war with all its cruelties has been enthroned, for what and aye for what?

Therefore, I must say that while the fundamental principles of justice upon which all permanent civilization rests secure had its great rise in the middle of the nineteenth century, the close of that century witnessed the spectacle of human rights struggling with the greed of men for what it had fought half a century ago. For human production the nineteenth century was the prodigy of the centuries,

but in the cause of human justice the march of progress has been stayed by the greed of man.

I need not in this presence say much of anything regarding our profession. The strides it has made in the past century are prodigious—with less than 100 dentists in all America in 1800, and with 25,000 to-day—but indicates our progress in numbers. The profession that gave to the suffering world that great boon which in the earlier days no prince or potentate could purchase, but which any pauper can have for the asking to-day has served a good purpose if nothing else were contributed. Horace Wells, in 1844, gave to the world anesthesia, which at once gave to the professions of dentistry and surgery their great impetus.

The legacy of the nineteenth century imposes greater responsibilities upon us professionally to-day. Let us be equal to the responsibilities imposed and gird ourselves anew for the dawn of hard work and realization. (Applause.)

THE TOASTMASTER: It is important for all men to look ahead. I do not know what the next speaker will say on this subject, but from what I know of his preaching I suspect that he is not a pessimist, and I do not believe that he will leave a gloomy picture in our minds when he is through. I take great pleasure in introducing to you the Rev. Dr. Joseph K. Mason, pastor of St. Paul's Universalist Church, Chicago, who will respond to the toast, "The Twentieth Century."

"A mild dedication of ourselves,

To unpath'd waters, undreamed shores."—Shakespeare.

DR. MASON was warmly received, and, among other things, he said: Mr. Toastmaster and Members of the Odontographic Society of Chicago: It gives me great pleasure to be here, and I feel profoundly the honor of being asked to address this society, after having come here so recently from Philadelphia. I am told that in Philadelphia now there are a few people who are beginning to commence their letters with 1901. Just a few are starting that way. And that is encouraging. (Laughter.) But it is in harmony with the spirit of that delightful city. You probably have heard the story of the lady whose little girl said to her: "Mamma, don't the Schuylkill River run through Philadelphia?" "No, my dear child," said the mother, "nothing runs in Philadelphia. The Schuylkill River flows." (Laughter.) You will not, therefore, be surprised if a Philadelphia

man should disappoint you in what he may have to say in response to the toast, "The Twentieth Century."

The subject that invites our attention is certainly most interesting. You have already had the subject of "The Nineteenth Century" by a twentieth century fellow, and now you ask a nineteenth century man from Philadelphia to discuss the twentieth century. I do not know why in the world any man should discuss the twentieth century, for if there is one fact of which we are quite certain, it is this: We know absolutely nothing of the future. Our eyes are closed to every page in the book of fate, so far as the future is concerned. From the earliest times to the present men have been seeking to peer into the future, to penetrate the iron curtain that separates us from that which lies before us. This is not strange. In taking a retrospective view of the nineteenth century, we can reasonably testify to one great fact, and that is, what has been will be. We used to say, it is probable that what has been will be. But in these days the nineteenth century has taught us the persistency of law in the natural world. Gravity, the transmutation of force, evolution and all the natural laws of the universe, the nineteenth century has taught us, are interchangeable. Therefore, it is not strange, improbable or unnatural to-day for a man to forecast the future in the light of the past. We may say with almost scientific precision now, that what has been will be, and therefore we look into the past as a mirror of the future, and are enabled in that way to see something of what must be because of what has been.

Then, again, there is another law in human history that helps us to look into the future with a reasonable degree of accuracy, and that is the law which enables each generation of men to hand down to posterity something better than it has received itself. A race of men differs from all animal creatures in this respect, that man is always climbing higher. The horse of to-day is no better than the horse of a thousand years ago in a certain sense. But that is not so with man. Each generation of men seems to be built upon a higher scale, so that man stands higher than the one who preceded him. He looks for ampler space; he is wiser, better than his father. Hence in the light of these facts, it is not at all improbable for us to look into the future and to see what it has in store for us. It is not unnatural to say that we may have to be prophets and forecast what is to come from what has been. There are some people to-day who are looking on the dark side of things, who are taking a very

narrow view of life, who see very little more than deterioration at the end of the century, and they think the world is going to the bad. They are pessimists, who point to the fact that there are a great many crimes disfiguring the pages of our present history. But in spite of all this, I declare myself, as your Toastmaster has said, an optimist. I do not mean by that, all things will proceed just as the laws of nature, or an all-wise Providence designed that they should proceed without reference to man; that man can neither hinder nor help the progress of the race, seems to be an absurdity. Instead of pessimism, of hopelessness, it seems to me we may take hope and look forward to better things and say with the Scripture, "Eye hath not seen, nor ear heard, neither have entered into the heart of man, the things which God hath prepared for them that love Him." I do not wish to imply by what I have said, that all the greatness and all the ability of the world are wrapped up in the present, nor that the present generation is so much better than those that have preceded it, and the future may anticipate greatness. I do not mean to say that either the present or the future is to be independent of the past. I maintain that that would be a shallow kind of philosophy.

The great word for the twentieth century is brotherhood. We should anticipate it for the twentieth century. It is to be a century of manhood, and all its progress will be in the line of brotherhood. It is unnecessary for me to say in the presence of scientific men like yourselves, who deal with facts, that there must be still greater development along the line of the application of scientific knowledge to the wants and needs of man. All that has come to man in the last century (and how wonderful it is) will be improved. Who can think of the applications that will be made of steam and of electricity in the century that is to come, judging from the things that have been done in the last century. It astonishes me when I think of it. Less than fifteen years ago, while walking along the streets of Buffalo and talking with a gentleman about electricity as a motive power, I suggested to him the possibility that Niagara Falls might some day be utilized, and that electricity might be generated there which would be of practical service to the people of Buffalo. He said, "That never can be." He had large investments in horse and tram-car railroads, and said his investments would be good for many years to come. Less than five years ago Niagara Falls was chained and utilized and made to serve man, and now nearly every street car in the city of Buffalo is propelled by electricity that is generated there. That is

only one illustration of the wonderful progress that has been made in science in the last quarter of a century. (Applause.) It prophesies wonderful things in the days to come. We may come into relation with the inhabitants of other planets yet; we may find many methods of alleviating human suffering and sorrow in this world. I have just realized that I am talking to dentists. (Laughter.) What a fearful looking lot of men you are! (Renewed laughter.) As has been eloquently said, you have done something. You have helped to relieve suffering incident to decay of the teeth. You may do much more than this in the century to come. It is not improbable that the scientific dentist of the twentieth century will say quietly to his patient (he cannot advertise): "My friend, for a real tonic, for absolute stimulus, for positive rest, the ocean and the mountains are not in it; they are like moonlight unto sunlight; they are like water unto wine, as compared with the dentist's chair. If you want rest, inspiration, joy (and joy is the key of the universe), come and sup with me." (Laughter and applause.) That is only a beginning of the wonderful things we may anticipate.

Great progress has been made in various directions in the past. In the time of Louis XIV. palaces were for the rich and nobles. Now they are thrown open to the masses. The Prince of Wales will soon take upon himself the privileges and responsibilities of King of England, by the consent of the people. The talk of divine rights has passed away. What does this argue for the future? It argues for the highest forms of government; that government is a progressive science. It has reached a high state of development in America, and what it is destined to reach in the century that is to come, no man can possibly tell. There are various forms of danger threatening our government to-day. We have not yet reached perfection. In all respects there is to be marvelous improvement. There may be a falling back, for progress is not always in a straight line, as Draper has clearly shown in his "Intellectual Development of Europe." But let us avail ourselves of the opportunities afforded us, and each take an active part in the progress of the century that is to come. (Applause.)

THE TOASTMASTER: I really and sincerely believe that if there is any profession that likes good fellowship more than another, it is the dental profession. We are good fellows with one another whenever we have an opportunity. The gentleman whom we have selected

to respond to this toast, "Good Fellowship in the Professions," is Mr. Thomas D. Knight.

"The majesty and power of law and justice."

—II Henry IV., v. 2.

I now take great pleasure in introducing Mr. Knight to you. (Applause.)

After relating two or three humorous stories, MR. KNIGHT said: Mr. Toastmaster and Gentlemen: After all, the minister, the lawyer, the doctor and the dentist are at heart good fellows, for they are men, and men are naturally good fellows. And it is upon occasions like this, when the cares and worries of professional life are laid aside, when the wine sparkles in the glasses, when eyes look into eyes, and hands grasp hands, that good fellowship is promoted. Then, hail to the good fellow and to good fellowship and the banquet table, where the good fellows may feast and drink and smoke and forget their cares and greed and selfishness of professional life, and remember only that they are good fellows, banded together with other good fellows by the indissoluble bands of humanity and comradeship and good fellowship; and believe me when I say, that for the purpose of smoothing out the furrowed brow of care and making the heart yearn and disposition sweet, a little good fellowship now and then is more potent than a prescription or a sermon. (Applause.) It is said that down in the depths of the great ocean there is a region where storms and tide are never felt, though the winds may blow at the surface and the waves be lashed into fury—down into those immeasurable depths there is a region of perpetual calm. And so it is with the human heart. Down in its depths there is a region where greed and selfishness are never felt, and we are in the precincts of that region, a region dedicated to kindness, unselfishness, humanity, and the god of good fellowship. (Loud applause.)

THE TOASTMASTER: If there is any one thing that the young men like to know about more than any other, it is the road to success. We are fortunate this evening in having a representative of the mother profession to speak to us on this subject. He has made a success in life; indeed, he has made a great success. He is, as you all know, a great specialist. He has written a great work in his special line, and you also know that he has not only written for the profession, but for the laity. His latest book is entitled, "Panama,

and the Sierras," an interesting story of a doctor's wanderings, written in the Doctor's inimitable style. Gentlemen, it affords me great pleasure to introduce to you Dr. G. Frank Lydston, who will respond to the toast, "The Young Man and His Road to Success."

"Fired at first sight with what the muse imparts,

In fearless youth we tempt the heights of arts."—(Pope.)

DR. LYDSTON was warmly received on rising to speak. He spoke as follows:

Mr. Toastmaster and Members of the Odontographic Society: It is hardly necessary for me to say that I appreciate the honor of breaking bread with you this evening. I have long since sworn off after-dinner speaking, and the temptation must be great that induces me to indulge. Ergo, the temptation *was* great and I accepted the invitation to be with you on this pleasant occasion.

The toast assigned me has given me grim satisfaction in its contemplation. I am just far enough past the hey-day of youth to warrant my friends saying to me, "Well, you're getting there old man," but I am not far enough along to believe them. I still affect the virtue of youth though I have it not. I still have in my veins as much youthful enthusiasm as is possible after twenty-five years devotion to medicine—years of devotion which, if not fruitful in result have been very busy ones, I assure you. The Odontographic Society is practically composed of young men. Pardon my effrontery when I say, I am one of you.

The vindication, aye, the glorification, of the young man, is a pleasant task. I remember so many things that occurred in the years when I had plenty of ambition and a sparsity of whiskers, which grated upon my sensitive nerves, that now, being possessed of much whiskers and little ambition, I am glad to take a "fall" out of the universe, if need be, in behalf of the young man.

Time was when ideas and gray hair were synonymous—when youth was a bar to appreciation—a bar to preferment—an insurmountable obstacle to fame and fortune. The young man was borne down by the load of contumely that his choicest possession brought upon him. He was humiliated by the oppression of that which, had he but realized it, made him a king among men. He was reviled and snubbed for the possession of the only thing in this world that is worth having—that priceless jewel—youth. How things have changed! Within a few decades a revolution has occurred, and the

young man has come into his birthright. He has come, not as a prodigal son, but as a sovereign returning to the possession of his own—to that of which injustice has long deprived him. And well has he demeaned himself.

Look where you will, over the field of human progress and you will find the young man busily working out the problems of the age, social, mechanical, electrical, chemical, medical, surgical, astronomical—in short, all problems of vital importance to the human race. Behind the most brilliant achievements of modern times stand the brawn and brain, the clear perception, the tireless energy and restless ambition of the young man. Literature, social science, art and the stage—what would they be in this modern age without the young man's genius, his robustness and his industry?

The young man is the vital principle of the entire body social, especially is he the soul-energy of the body professional. It is the young man who gives the learned professions their unselfish, frank, self-sacrificing ambition. To him are due our rosy hopes and lofty ideals—he it is who imparts to humanity some of his own warm-hearted, honest enthusiasm. Men of maturer years, whose hearts have become worldly—whose feelings have become case-hardened—whose sympathies and emotions have been calloused or worn thread-bare by rough treatment and frequent abuse—whose faith in human nature has been torn to a frazzle in the treadmill of work-a-day life, need just such healthful rejuvenation as contact with virile, healthful mind imparts.

Possibly it is better that the outer gloss of the young man's armor of hope and sanguine expectation eventually becomes worn off—better that his ideals sooner or later become less rosy by being tossed hither and thither on the storm-swept sea of active professional or business life. Still, in the wearing off of that gloss, society receives much betterment. It owes much to the infusion of young hopes and new, vigorous blood so richly laden with red corpuscles, that each year adds to the workers in life's garden.

Were it not for the revivifying influences of the young men who enter our learned professions from year to year, they would soon look like a collection of dry, shriveled up mummies—with nothing in the present worth living for, no hope for the future, and nothing in the past worth remembering.

"Tis well to give honor and glory to age
With its lessons of wisdom and truth.
Yet who would not go back to the fanciful page,
And the fairy tale read but in youth?
Let time rolling on, crown with fame or with gold—
Let us bask in the kindest beams;
Yet what hope can we cherish; what gifts can we hold
That will bless like our earlier dreams?"

There are those who call forty-five the "prime of life!" I often wonder by what standard they gauge it. Perhaps as some connoisseurs do cheese. They consider it "prime" when it is a little too bad to eat, and a little too good to throw away.

Very few men at middle age can look back with the satisfaction of hopes fulfilled and ambition gratified. At twenty, nothing is impossible. Everything, from the million you seek to the girl you love, seems ready to drop into your hands. And, if the million does not drop, the girl does, so what would you? The young man looks ahead and sees nothing but rosy possibilities. The middle-aged alleged philosopher looks back at an array of ungratified ambitions that staggers him.

"But what about the girl? you ask. Oh, yes, the girl!— .

"When first I met thee, maiden fair,
So many years ago.
Like golden threads thy glossy hair,
Thy cheeks with health aglow.
But now I see thee through the haze
Of later life's cigar.
I just appreciate the joke,
'Tis bleach and rouge you are."

Standing upon the threshold of a new century, the young man might well say, with Monte Cristo—"The world is mine!" The century that has just begun is his. As we gaze out over the ocean of life and behold the good ship "Progress" battling her onward way, we may feel the greater confidence from knowing that the young man is at the helm, and we may well feel proud to know that the finger of destiny points to him as the man of the hour.

But, when I say that the twentieth century is his, I do not mean that the young man is to have it for the asking. Never in the history of the world has competition been so keen—never has it been so

skillful—never have there been so many terrible obstacles to be overcome—never has the road to success been so obstructed by snares and pitfalls. So hard has the way to success become, that only strong young hearts and virile brains may reach the goal. It is because of these increased difficulties that the young man is to have his day.

I cannot refrain from saying something directly pertinent to success and the road to it. I must lay aside for the nonce, my own views of success. I will say, however, that in my opinion, there never was a successful man born of woman, and as gods and goddesses have gone out of the business of replenishing the earth, I feel that I am safe in saying there never was a successful man. "But,"—you say, "I know plenty of successful men." Yes, perhaps you do. You know many men who have achieved much of what the world calls success. But the world sees only tangible results. It knows nothing of ambitions. Success implies ambition, and ambition is never satisfied. Ambition has ever more worlds to conquer, and, as surely as there is no to-morrow, the ambitious man is never a success in his own estimation. He is ever striving for the moon, which is always just beyond his grasp. The accepted standard of success is very unsatisfactory to the so-called successful man. I believe I can suggest a better. Let our standard of success be the highest possible development of the individual. When a man has achieved the best results possible to himself through the attributes with which nature has endowed him, that man is a success, no matter what the outward seeming may be. The dollar standard of success has built up a rotten American would-be aristocracy that is disgusting to one who recognizes but two kinds of true aristocracy—one, an aristocracy of brains, the other, an aristocracy of cleanliness.

The man who, in a given pursuit, has developed himself to the full measure of his capacity, is a success. The man who has done good to his fellow-man is a success. The man who has been no man's slave, yet has not aspired to be, nor become, any man's master, save through dominancy of intellect, is a success. The man who has merely dollars to be disposed of by the probate court is a pitiful failure. And so, the world is wrong.

The pathway to success is a thorny one. Things do not always come to him who waits—they always come to him who does. And I refer not to that *fin de siècle* revision of the golden rule—"Do others lest ye be done."

In how far does genius contribute to true success? Not so

much as some believe. If most of us waited for the inspiration of genius our life's end would overtake us e'er our labors had well begun. Some one has said that "genius is the capacity for hard work." This, mayhap, is too sweeping, but 'tis certain that, in the long run, work outstrips genius—the old fable of the tortoise and the hare. Genius too often flares up in fire, only to end like fire—in smoke and ashes. Genius oft consumes itself.

How shall one work to achieve success? Work overtime, my young friend. The men who have fought for the eight-hour day are poor models for the ambitious. Such men chafe at the prosperity of their employers. But those employers have always worked overtime. There's the difference. Divide all the wealth, the fame and glory and knowledge of the world equally among men, and in a few years the same old division into those who have and those who have not will prevail. Those who have not will be eight-hour men—those who have will be the ambition-driven men who work overtime. If I were asked to what I attributed such modest success as I have achieved in life, I should answer, to working overtime.

One of the greatest helps to true success is independence of thought and action. The young man should have no tin gods. He should scorn the dogma of infallibility, and carefully weigh the dicta of the masters—masters human like himself, and therefore fallible. The road to the dollars, perhaps, lies in being "all things to all men." But what slavery! "The independent man who has the courage of his convictions makes enemies," you say. Very true, but we should love such enemies. Enemies are milestones on the road to the goal, success.

One of the staunch stepping stones to success is learning things one does not have to know. The difference between the man of mediocre attainments and the master minds of the world, is that the former have striven only for those things for which they were compelled to know. The latter have worked overtime and acquired knowledge for its own sake.

When success comes to the earnest worker, let him not be dazzled by the plaudits of the crowd. Once, while in a mood of gall and wormwood into which I was thrown by the published praises lavished upon one of my literary friends who was well nigh left to starve in a garret ere recognition came to him, I wrote several rather pessimistic verses *apropos* of success. I will ask you to bear with me while I repeat them.

SUCCESS.

There was once a man who had lived his day,
And achieved success—in a worldly way;
He had strived for wealth; he had slaved for fame
In the battle of life—a toilsome game—

Poor man!

There was once a man who had reached the heights,
Far beyond his wildest fancy flights.
Ambition driven, his bark had crossed
The sorrowful sea, dark, and tempest-tossed—

Poor man!

There was once a world that had watched a man
Since his wearisome upward path began,
Meanly opposed every inch of the way,
Obstructed his road and rejoiced to say—

“Fool man!”

’Twas a bitter world that beheld this man
Who had fairly thwarted its selfish plan,
Who had sturdily fought, and won his spurs
With never a thought for the howling curs,
Yet the world extended a cordial hand—
Marching as ever, just after the band—

“Good man!”

There was once a man who stood looking behind,
And saw not a soul that ever was kind.
He remembered long hours and midnight oil,
Those sleepless nights with their arduous toil—
He sickened to hear the cheers of the mob,
His worn heart froze in the midst of a throb—

Wise man!

The moral of which is that the young man must learn to appreciate at their true worth, not only the enemies he makes in his upward path, but also the friends who flock to him when success is won. As all is not gold that glitters, so all who applaud are not friends.

To attain success along the lines which I have briefly indicated in this necessarily short and cursory address, breadth of culture is a *sine qua non*. Colleges may lay the foundation, but they often do but little more than place the necessary intellectual tools in the young

man's hands. Upon him devolves the using of those tools and finding the materials wherewith to build his fame and fortune—he cannot shift the responsibility upon the shoulders of his college. He must have no idle moments if he would succeed. “All work and no play makes Jack a dull boy” it is true, but all play and no work makes human butterflies. Did I say butterflies? Pardon the expression, for it makes men who, like the mammary glands of the mule, are neither ornamental nor useful. Recreation is necessary, but there is such a thing as useful recreation. Every man should have a hobby, but there is no cogent reason why his hobby should not be useful to himself and humanity. The latest novel may be a source of recreation, but if it does not contain the germ of self-improvement it would better be used to light the evening pipe. There is nothing which extends the visual perception or broadens the mind like a varied field of reading. An old medical philosopher on being asked by a student what book he should read to make him a better doctor, replied—“Read Don Quixote.” I am not sure that the student quite comprehended the value and scope of the old man's advice, but I believe it meant much. The great Hermann Boerhaave left behind him a huge book which contained only this: “Keep the head cool, the feet warm, and the bowels open.” This has oft been satirically quoted as a grim satire on human knowledge. It was the intellectual “six feet of earth.” Alas! that any sane man should not comprehend the immense fund of knowledge from which that priceless pearl of medical philosophy was gleaned.

The young man on the threshold of life is often appalled by the prosperity of dishonesty and the poverty of truth and probity. Let him remember that externals do not constitute true success. He must not turn aside from the straight and narrow path. He who begins by deceiving the world, ends by deceiving himself. And then he may well cry: “*Cui bono?* of what use is knowledge?”

Just a word more and I will have done.

In his strife for success let the young man remember that a selfish success is a dismal failure. I know of several men whom the world calls great, who in my humble estimation are infinitesimally small. The man who sacrifices all of the higher emotions and ennobling attributes of human life on the altar of ambition may attain what the world calls success, but he is a spectacle to excite the pity of gods and men. He may stand on the highest pinnacle of fame, but alas! he stands alone. No one ever loved him, nor has he ever loved any one

but himself and his ambition. Glory in which no one shares is gall and wormwood indeed.

At the conclusion of the speeches Dr. L. S. Tenney was installed as president of the society. After a brief but felicitous speech by Dr. Tenney, the society adjourned.

THE NEBRASKA STATE DENTAL SOCIETY.

The twenty-sixth annual meeting of the Nebraska State Dental Society was called to order in the lecture room of the Omaha Medical College by President Dr. William H. Sherraden at 10:40 a. m. May 21, 1901. The morning session was taken up with roll call and reading of the minutes of the previous annual meeting.

At the afternoon session the following clinics were given:

Dr. H. J. Hill, Alma, "Something on Crowns and Bridges."

Dr. L. K. Fullerton, Denver, "Demonstration of W. E. Griswold's Removable Bridge."

Dr. W. R. Smith, Pawnee City, "Berry's System of Seamless Gold Crowns."

Dr. T. J. Hatfield, York, "Constructing Porcelain Crown."

In the evening W. H. Christie, M. D., was introduced by the Chairman and delivered an address of welcome on behalf of the citizens of Omaha, the local dentists and the medical profession.

Dr. W. C. Davis, of Lincoln, responded on behalf of the Society to Dr. Christie's remarks.

The President, W. H. Sherraden, then delivered his annual address, which was as follows:

To Members of the Nebraska State Dental Society:

It is with great pleasure and congratulation that I greet you at this, the twenty-sixth annual meeting of the Nebraska State Dental Society.

Twenty-six years ago next July this Society was organized as an off-shoot of the Missouri River Dental Society, by some half dozen dentists, principally from Omaha. These pioneers met in the office of Doctor Charles, who is now deceased. From the birth of this organization in 1876 it has continued to grow and extend its influence throughout the State, its sole object being to bring the members of the dental profession together for the sake of good fellowship and professional advancement.

At the time of its organization in the centennial year, there was

but a handful of dentists in Nebraska. The good influence of the organization was immediately felt, and a large per cent of the dentists then practicing were brought into its fold. Since that time the profession itself has made very rapid strides toward the ideal. The question for us to answer in our minds is: Has this Society kept pace and made the same rapid advancement? Have we reached that perfection as a Society? Do the members and the dentists of this State look forward to these annual gatherings with that pleasure and zeal they should, and do they all show the proper interest and enthusiasm?

At the present time there are nearly 300 dentists in Nebraska. Of this number only eighty-nine have thus far enrolled themselves as members of this organization. Of these eighty-nine our records show only forty-seven to be in good standing. Every ethical dentist in this State should be a member of this Society. It is my opinion that the Society as an organization has been in a state of suspended animation for several years past. Last year it was aroused to a certain extent and we hope this year that very material progress will be made. This interest should increase henceforward from year to year, till every ethical dentist in Nebraska is enrolled on our records. Until this is accomplished each individual member should consider himself a committee of one to bring in the outsiders.

It is our opinion that the State Dental Society should control dentistry in this State, and be privileged to say what the laws shall be that governs its practice. We have a dental law which we consider to be a good one, but there is still room for great improvement. It is not so much the fault of the law we think, as the seeming lack of enforcement of it. Our Nebraska law provides for a board of dental examiners that shall be appointed by the Governor of the State, from a list of dentists who obtain their recommendations from this Society. Has this been done? In the year 1896 this Society saw fit to make the necessary recommendations to the Governor, who in turn ignored them, and selected a board of examiners of his own choice. This rebuff should not deter us, and we should continue to make these recommendations from year to year until the proper recognition is given us. This list should contain from ten to a dozen names of men eminent in their profession, and a committee should also be selected to wait upon the Governor in the interest of those recommended. We think this society can better be trusted to select men to fill the positions of dental examiners on the State board, than if this important duty is entrusted to politicians who have not the interest

of our profession at heart. We contend that heretofore these appointments have not been made according to law. If such is the case, they must therefore be illegal. If the appointments are illegal, it is a logical conclusion easily reached, that the acts of the Governor's appointees must also be illegal.

It is said that the State Board of Health has declared that part of the law to be unconstitutional. "Upon what meat do these Caesars feed, that they have grown so great?" Has the State Board of Health authority to pass upon laws as enacted by the State legislatures? From a legal standpoint, I think not.

Our neighboring State of Iowa has an excellent law governing the practice within its boundaries. It has in it incorporated this very identical clause that we are contending the enforcement of in Nebraska.

There is a disposition on the part of some members of the dental profession to draft a new law in Nebraska, and I believe now to be the proper time to take this matter up. A committee should be appointed during this meeting whose duty it shall be to draft a new law for consideration at our next annual meeting, so that it can be in proper form for presentation to the legislature when it again convenes in 1903.

You have all noticed in glancing over the program that your Executive Committee has taken the liberty to deviate from the old and time-honored custom of holding the election of officers and selecting the next place of meeting. It has heretofore been the custom to attend to these matters on Thursday evening or Friday morning. These selections are now slated to be made on Wednesday evening. This was done with a hope that members would bestir themselves and create interest and enthusiasm throughout the meeting and at the same time be in shape to formulate plans for one year hence.

In Section 2 Article 7 of the Constitution it says:

The permanent and standing committees shall be as follows:

- 1st. Committee on Membership.
- 2nd. Committee on Operative Dentistry.
- 3rd. Committee on Physiology, Dental Histology and Microscopy.
- 4th. Committee on Dental Pathology, Surgery and Therapeutics.
- 5th. Committee on Dental Chemistry and Metallurgy.
- 6th. Committee on Prosthetic Dentistry.
- 7th. Committee on Literature and Dental Education.

Seven committees covering all departments of dentistry. Seven committees covering all phases of the work of this Society—and thus dividing the work up among a number of members and systematizing it, while heretofore this work has all been done exclusively by the Executive Committee. The Executive Committee should not be expected to shoulder this entire responsibility. The seven committees above mentioned should be created to assist. To build up this Society to what we think it should be, the Executive Committee should have the united support of these various committees, and supplemented by the individual efforts of all members.

Having the election of officers take place on Wednesday evening will give the incoming officials an opportunity for the selection of these committees. In this way they can formulate their plans and get their work well under way for the next annual meeting. This suggestion is made because it must be evident to all present that such work can best be done while we are together rather than to trust it to future correspondence.

A dental society cannot be successfully built up by outside men. It must necessarily be done by resident dentists whose interests are wholly local to the State, and who also should be members of this organization. We have in this State just as much talent, genius and originality, we think, as can be found elsewhere. It is of course proper to extend the hospitalities of this Society to the experts in the different lines of work. It increases our interest in our profession, enlightens us, and gives us an opportunity to gather new ideas and profit by the wisdom and genius of men who have become eminent in special lines.

In looking over our Constitution and By-laws when preparing the program for this meeting, your Executive Committee were of the opinion that there was much need of a revision, and we would recommend that a committee be appointed at this gathering, whose duties it shall be to suggest such changes as they deem best and proper, and make a written report of their deliberations for consideration at our next annual meeting.

Your Executive Committee has been most earnest in their efforts to make this Society an interesting and instructive organization. In arranging the program we have followed the same plans as last year; that is, in having the papers and discussions in the mornings, the clinics in the afternoons and papers and discussions again at the evening sessions.

There is so much interest manifested at present by the profession throughout the country in porcelain work that we have made an effort to have a variety of work along that line.

The program is a lengthy one and no time should be wasted. We especially request that all members act promptly in all matters of business that may come before the Society. Promptness in attendance is enjoined upon all. It is the desire of the Executive Committee that no numbers on the program be omitted.

In closing, I assure you I appreciate the honor of being selected as your presiding officer for the first annual meeting held in the twentieth century. During the last 100 years, dental science has kept apace of the world's progress. I hope and know these sessions will be productive of good results. While not claiming to be versed in parliamentary law, as your presiding officer, I will do the best I can, and ask your indulgence at any seeming errors that may come under your notice. The individual interest and efforts of all members is alone what will make these meetings a success. Papers read should be freely and fully discussed; the opportunity for renewed social intercourse and the ripening of friendships already strongly cemented should not be overlooked, and above all, the Omaha contingent should extend the glad hand to the visitors from the various parts of the State and abroad who are now among us.

Dr. Leah Mills, supervisor of clinics, made a report on the clinics given during the afternoon as follows:

Dr. H. J. Hill, of Alma, gave table clinic. Gold crown. The band was longer than usual, forming the inner surfaces of the cusp, the shaping being done with pliers. The occlusal surface was stamped, the joint being within the occlusal margins. Dr. Hill's skill with the use of gold has been repeatedly demonstrated before this Society, and this was up to the standard in workmanship. He claimed the advantage of this crown in cases where gold tarnishes in the mouth. The solder line is hid from view.

Second clinic. Griswold's Removable Bridge. Dr. L. K. Fullerton of Denver was to have demonstrated this bridge, but was unable to be present, and Dr. Hunt very kindly agreed to show it. An anterior bridge of porcelain was shown, a posterior bridge of vulcanite, and a full upper denture of vulcanite. This last was attached to three roots by the attachments on the principle of the ordinary glove clasp.

Third clinic. Dr. H. J. Hatfield of York. Prepared root and

made a porcelain crown. Adjusted a Justi facing to a platinum post and cap, and filled in back and over band edge on the labial surface of band with Close body and baked. Three bakings were given before completed.

Fourth clinic. Dr. W. R. Smith of Pawnee gave table clinic, Seamless Gold Crowns, made by Berry's system. A molar and two cuspids were made to show the method.

Dr. H. A. Shannon read his paper on "Seamless Crown Systems." It is herewith submitted:

In appearing before you this evening, I fully realize the opposition with which this paper will meet and the prejudices which now exist in the minds of those who have endeavored to do conscientious work by means of any of the many systems of seamless crowns, and that it will require convincing evidence to overcome those prejudices.

I believe that the system that I shall soon present to you contains points so convincing that the most skeptical will have to admit that it does what is claimed for it. In making crowns by any system there are certain points that must be secured in order for the crown to be perfect and perform the functions of nature. These points can be secured by the Berry System of Seamless Crowns, as accurately as by any known system.

First let us inquire: What are the points a crown must possess to be in the language of Dr. E. J. Perry "a cracker jack"?

There are five—namely:

- 1st. It must fit the root.
- 2nd. It must have contact points with its neighbors.
- 3rd. It must properly occlude with its opponents.
- 4th. Must have wearing qualities.
- 5th. A good shape.

A Berry outfit consists of a draw plate and heavy steel ring. The ring has a cone-shaped center with two slots or grooves opposite each other and wide enough to admit a thin piece of cardboard.

By this system we not only secure the above mentioned points, but have the additional ones which cannot be secured by any band and cusp system. They are—namely, the dividing of the blue line left by the solder uniting the band and cusp, and lastly the band being of a uniform strength preventing the liability of splitting.

The question naturally arises in the mind of the thinking man—how can all these points be secured by any seamless crown system? In the first place the root must be so prepared that it is conical in

shape, the largest part being just under the free margin of the gums. The measurement of the root is then taken by means of a dentimeter and a piece of small steel wire. Care should be taken that the exact measurement is secured. Cut to this measurement a piece of copper of about 28 gauge, and not more than one-fourth of an inch in width. Bring the two ends together and unite with a small piece of solder. Fit this band to the root until on the lingual and buccal surfaces it passes just under the free margin of the gums and allowing it to infringe on the proximal surfaces. Then diminish the band in width to suit the case.

With the band in place secure the bite in wax and then get an impression of the root and adjacent teeth in plaster. If the band does not come off with the impression remove and put in place. Also secure an impression of the antagonizing teeth. Run up the models and mount on the articulator. Cover the band and fill the intervening space with plaster. Having first oiled the opposing teeth, close the articulator to secure impression of cusps in the soft plaster. When the plaster has crystallized sufficiently to admit, open the articulator and carve from the plaster a tooth that fills all the requirements. Remove the tooth and band and smooth the proximal surfaces.

To secure an accurate impression of this tooth in metal, place the tooth band down on a smooth piece of moldine. The moldine should fit so accurately to the band that there is no place for the metal to get between them. Around the tooth and resting on the moldine place the metal ring with the large end of the cone resting on the moldine. The tooth should occupy about the center of the open space in the ring. In the grooves on either side place pieces of cardboard, so that they nearly but not quite touch the tooth. Fuse Melotte's metal and pour into the ring until it is level full. After the metal has crystallized remove it from the ring and displace the pieces of cardboard and separate the metal into two pieces by wedge pressure in the grooves made by the cardboard slips. After removing the plaster tooth place the two pieces together and slip them to place in the ring. Into the space formerly occupied by the plaster tooth, slip a shell of gold that has been drawn out to fit the case and fill the center with modeling compound. Drive this modeling compound home until the shell accurately fits the opening in the metal. It can be removed from time to time in order to see when you have accomplished this.

The shell spoken of is drawn from a piece of 26-gauge gold by

means of the draw plate. For a molar crown a piece corresponding in size to that of a 5-cent piece should be used, and for a bicuspid one about the size of a dime.

The festooning on the proximal surface is accomplished as the crown is pressed to place on the root. It is also essential that the plaster tooth should be dry before the metal is poured in around it or a faulty impression will be secured.

Dr. H. J. Cole of Norfolk read his paper on the importance of sharp instruments.

It is herewith submitted:

The woodman in the forest before he begins to fell the mighty oak, sees that his ax is not only the very best that is made, but that it is properly ground and beveled, so that when the brawny arms swing it into the hard wood, each stroke sends whirling through the air a chip from the massive trunk. The carpenter before putting his jack-plane upon the undressed board, spends considerable time in sharpening the bit, and so with each tool he uses, it must be brought to a keen cutting edge before it can be used with any degree of safety or comfort.

Then if it is considered so essential by these workers in wood to have their tools in proper shape, certainly it needs no argument to convince us that ours should not only be of the very best, properly shaped and beveled, but brought to the keenest possible cutting edge. I fear that we sometimes forget that we are working upon the organs of living, sensitive human beings, so clumsily and bungling do we handle our instruments, and in such horrible condition are they. The best obtundent of sensitive dentine that I know is a sharp excavator or bur. The easiest, quickest and surest way of making the proper "extension for prevention" is by the use of the chisel deftly handled, and you cannot safely cut enamel with a dull one.

Do you know how to sharpen an excavator or chisel? Then learn before you go to the operating chair again, and we should have enough instruments of any one kind that when the keen edge has become marred it can be put aside until convenient for sharpening, and I might say just here that under no ordinary circumstances would I attempt to sharpen a chisel or excavator while tired from nerve force expended over tedious and difficult operations, but would drop the instrument in a convenient box, and attend to that next morning before beginning the real work of the day; and when you have learned how to use sharp instruments of that kind, you will be sur-

prised to see with what ease to yourself and your patient you have been able to perform your operation, and how little you have been obliged to use that "horrid machine." And I do not wonder at the "vile epithets" that are hurled at this most essential instrument of our operating room, when I see the bur some men attempt to use, actually worn smooth enough for a burnisher. The bur that has been used to make the step for anchorage in the ordinary proximal cavity in bicuspid or molar, is not fit for use again as a rule, and should be laid aside where it will not be taken again by mistake; and too much care cannot be observed along this line in our work if we wish to serve our patients the best, and with the most comfort to ourselves.

The makers of burs have attained such skill in their manufacture, and at such very reasonable cost that I hardly think it worth while to attempt their sharpening when dull.

"Why all this about the importance of having sharp instruments," I hear some one say.

I grant that it should not be necessary for any one to take up the time of this Society in the attempt to point out its importance because of its axiomatic nature, but as long as operators become careless in their habits it seems to be necessary for some one to keep reminding them of these things.

THURSDAY, MAY 23.

The report of Dr. Leah Mills, supervisor of clinics, was read as follows:

5th clinic. Dr. A. O. Hunt of Chicago illustrated his paper of the morning by models showing how he secured adaptation of plates in difficult cases, by carrying the impression well up on those positions that do not change. Dr. Hunt exhibited model of completed plate illustrating form given to utilize power of the muscles of cheek to hold plate in position.

6th clinic. Dr. A. W. Harlan of Chicago bleached a tooth, using peroxide of sodium, washing with distilled water, then washing out with very dilute solution of sulphuric acid, again washing with distilled water and lined with phosphate of calcium mixed with distilled water and filled immediately.

7th clinic. Dr. J. H. Wallace of Omaha, gold contour filling. proximal cavity of left upper central, step in occlusal. Used Morgan and Hastings cylinders and packed with hand mallet.

8th clinic. Dr. H. W. Shriver of Omaha restored the occlusal surface of a left upper central incisor, using Williams' gold and

platinum foil No. 30, packed in single thicknesses with automatic plugger.

9th clinic. Dr. George S. Nason of Omaha, a gold filling in occlusal surface of a molar, using electric mallet.

10th clinic. Dr. P. T. Barber of Omaha, anterior proximal cavity in upper bicuspid, step in occlusal. Used moss fiber gold for body of filling, completing with Rowans' pellets. Automatic mallet used for packing.

Thursday afternoon, May 23, devoted to clinics, the supervisor's report of which is as follows:

11th clinic. Dr. McMillan of Kansas City took an upper impression. First took impression in modeling compound, then trimmed away excess outside of tray. Heated the anterior part and replaced in mouth, having the patient move muscles of upper lip to carry impression out of way of muscles. Removed and heated the posterior portion and replaced in mouth forcing the compound well up against palatine surface. Again removed and run a layer of plaster over the entire surface, placed in mouth for final impression. Left the upper margin unmolested through all further proceedings to form exact margin of completed plate.

12th clinic. Dr. A. P. Johnston of Omaha gave nitrous oxide and extracted badly broken down root of left upper cuspid with elevator. Very successful operation.

13th clinic. Dr. D. O. M. LeCron of St. Louis gave an exhibition of porcelain work. Porcelain bridges, crowns, full denture removable bridge and inlays. Very artistic work indeed. Showed also a high heat blowpipe of connecting illuminating gas with nitrous oxide cylinder. Made intense heat, sufficient to fuse steel and platinum. Also exhibited root canal drier by carrying illuminating gas through increasing smaller tubing, at last through point of water syringe, connected to this later a slide holding a copper wire in front of the flame.

14th clinic. Dr. L. P. Davis of Lincoln filled root canal in tooth with blind abscess, canal containing pus at beginning of sitting, with oil of cloves and aristol. Cleansed canal with pyrozone dried and saturated thoroughly with oil of cloves. Carried aristol into canal on broach until full, slightly mixing it with suprarenal capsule.

15th clinic. Dr. E. A. Meservey of Kearney removed live pulp without pain by using holocain with pressure under soft vulcanite.

16th clinic. Dr. A. P. Johnston of Omaha, an amalgam filling,

anterior proximal with step in anterior and occlusal surfaces of a molar. Used a Peterson matrix, filled with twentieth century alloy.

17th clinic. Dr. F. H. Wallace of Omaha, amalgam filling in buccal surface of lower molar. Filled with twentieth century alloy.

18th clinic. Dr. W. R. Smith of Pawnee showed a banded Logan crown. A cap was made for root, then Logan ground to fit at anterior portion, but allowing a wedged shaped space at the back. A piece of pure gold was then adapted to the ground surface and properly occluded, then removed and invested, cutting investment away from around the joint, so the flame reaches all portions of it, and solder. The completed crowns showed a very accurate joint and a beautiful piece of work.

19th clinic. Dr. C. E. Woodbury of Council Bluffs showed original method of articulating crowns. The articulator used was an original design. It was about four inches long and the upper arm, held by two screws, was removable, allowing a second one to be substituted, during the process. The band is first fitted to the root and taken off in the impresson and placed in the articulator. After the opposing model is hard, the upper arm of the articulator is removed, an impression of it taken in moldine and a model formed of Melotte's metal. This is then adjusted to the second arm of the articulator. A cap for the crown is struck up from a die and placed on the band, then the articulator is closed very hard, thus forcing a perfect articulation. If the front screw be loosened a lateral movement is secured, leaving no use for a cusp being too high in a lateral movement of the jaws.

20th clinic. Dr. O. R. Kelly gave a very interesting exhibit of microscopic specimens of teeth under healthy and unhealthy conditions.

On motion duly seconded the annual sessions of the Nebraska State Dental Society were adjourned *sine die* to meet at the call of the Executive Committee.

Officers for the next year:

President—Dr. H. J. Hill of Alma.

Vice-President—Dr. H. A. Shannon of Lincoln.

Corresponding Secretary—Dr. H. B. Sherwin of Lincoln.

Recording Secretary—Dr. W. R. Clark of Seward.

Treasurer—Dr. H. T. King of Fremont.

Place of Meeting—Lincoln.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

DR. HARLAN RETIRES.

To the Readers of the DENTAL REVIEW :

With the December issue of this journal the writer's connection as editor terminated. In severing a connection with dental journalism of more than fifteen years my thanks are due the many friends who have so abundantly aided in getting material to fill the pages from month to month with matter not previously published. During the whole period of my incumbency of the editorial chair, except in rare instances, I published matter not hitherto in print. The enterprising but useful advertiser sought in many ways to introduce into the reading pages matter not strictly news of a professional nature, but he rarely attained his object. When I look back after all these years I feel a sense of pride in the value of the original articles that have been given to the world in the pages of the DENTAL REVIEW. I retire now because the labor, while pleasant and agreeable is not remunerative. My successor is young and ambitious and has already had experience in this field, hence he needs no introduction. I sever this connection with some feelings of regret that time alone can render less painful. I always felt that I knew my contributors and for their loyalty and faith in my endeavors to treat all fairly I am more than recompensed. I trust that the future of this journal will be more successful than ever and that its aims and purposes will be kept to the standard of its originators.

A. W. HARLAN.

A WORD OF GREETING.

As will be seen by the foregoing communication, Dr. A. W. Harlan has retired from the DENTAL REVIEW, and the task of conducting its editorial pages has fallen upon the undersigned.

In assuming this position my first duty—and pleasure—is to pay a tribute of respect to the man whose genius first established this journal, and whose untiring energy has made it a power in the domain of dental periodical literature. With the exception of one year—when I edited it myself—Dr. Harlan has been at the helm from its inception, and he has succeeded in making it one of the most widely read and most liberally quoted dental journals in the world.

I need not say that his retirement is to me a source of deep personal regret. It would have been more to my liking to have remained simply an interested reader of the DENTAL REVIEW than to be its editor. As Dr. Harlan has kindly said I am not altogether new in this field, and for that very reason I approach my duties with an added sense of my responsibilities. No man who has once edited a dental journal will ever think lightly of the task, and I am vividly reminded of the significant remark of my friend, Dr. George E. Hunt, editor of the late *Indiana Dental Journal*, who announced, as the sole reason for his journal's suspension, that "the editor was tired."

I, too, expect to be tired—that seems to be what editors are for. And yet there are compensations, the like of which no man may know who has not received from appreciative readers the seal of approval on what he presents for their entertainment month after month. It is to these compensations that I now resolutely turn my face, and as for the cares and trials they must take potluck with me, and be met only when occasions arise. I, at least, am not going out to seek for them.

As to the future of the DENTAL REVIEW, its prospects were never so bright in its history as they are to-day. Its circulation has gone up in astonishing ratio within the past few months, and is daily advancing rapidly. This is a source of great satisfaction and great encouragement, not only to its editor, but to the publisher, whose assurance I have that nothing will be left undone to keep the DENTAL REVIEW in the van of dental journalism.

To my fellow-editors on other journals I extend a hearty hand-grasp of fraternalism. I am personally under many obligations to nearly every editor who is to-day laboring in this field, and my greatest hope is that in the future my relations with them will continue to be as cordial and as pleasant as they always have been in the past.

C. N. JOHNSON.

AN OPPORTUNE MONTH.

The first month in the year is the great stock-taking month in all lines of business, and it is well that there is a periodical break in the regular routine of life so that men are thereby brought face to face with the stern realities of their status. This stock-taking need not by any means be limited to business men or business methods. It may be made to include professional matters, and a man's general standing in the world about him.

Among dentists there is always the need for a quiet, calm deliberation over certain matters about which dentists generally are not accredited with any too much discrimination. The members of our profession are seldom noted for conducting their affairs in a businesslike manner, and the first month of the year is an opportune time to take stock, not only of one's cash account but of one's self. There never was a year so successful that the next one could not be made more so by adopting improved methods, and improved methods are always to be had by searching for them. Let every dentist whose year has not been all that he could wish it set out to study the problem and see wherein the fault has been. He will usually find it right within his own individuality, so nearly are we the arbiters of our destiny.

There is no more profitable expenditure of time than to utilize an hour or two each evening taking stock of the methods employed in the past twelve-month with a careful consideration of plans for their betterment. Canvass the whole situation thoroughly and well until the assurance is had that there is nothing more to learn on the subject up to date, and then proceed to put the new ideas thus formulated into practice.

One reform that nearly every dentist can profitably follow is to be more systematic in his business arrangements. He can collect his accounts a little better perhaps, he can pay his bills more promptly, he can establish the reputation in his community of holding business obligations sacred, and when he has once gained this kind of reputation his relations with his fellowmen will be more harmonious and gratifying. There is always an element of real happiness in the sense of being even with the world and able to look every man in the face. Unless you—*you* who read this—have acquired that position, sit right down and study the situation till you have solved the problem sufficiently to attain it.

Do not go on year after year with the incubus of a reputation for unreliability hanging about you.

OUR FOREIGN RELATIONS.

It is with a feeling of gratification that in the columns of the November number of the *Journal für Zahnheilkunde* we read the reprint of an official statement of the Bavarian Minister for the Interior, according to which the use of the American degree of D. D. S. will, upon application, be permitted in that country, provided the petitioner is graduated from a reputable college. It is expressly stated that to ascertain the reputability of colleges the list procurable through the Department of State in Washington will be looked upon as authentic.

This latter provision imposes on us the absolute necessity of our keeping the Department of State in Washington perfectly informed as to the standing of the different schools in America. Foreign governments will, as a rule, look to the government only for information in the premises. Yet it seems that on the part of the German government of late an effort is being made to get an unbiased insight on their own account into the matter of dental education in this country so as to be able to decide along the line of merit only. In this direction we are in a position to state that shame laden Illinois is especially fortunate in having stationed in its German consular post a man who by his past actions promises to conduct a vigorous and highly unprejudiced investigation. It has come to our knowledge that in his latest reports to his government in Berlin he has spoken in recommendation of all colleges belonging to the National Association of Dental Faculties.

Let this gaining of honorable ground be an additional spur to the N. A. D. F. to do their very best in meriting the confidence thus placed in the reputable American dental educational institutions and their integrity.

THE EDITOR'S DESK.

It has always been my desire, whenever I have occupied the editorial chair, to get as near my readers as possible. I have the feeling that I want to sit down beside them and touch elbows with them—give them my confidences, and receive theirs. Much of the inspiration, most of the recompense, and all of the pleasure, connected with editorial work on a professional journal—if there be any pleasure connected with it—consists in the community of interest and sentiment which should naturally spring up between reader and editor. It is this which keeps up an editor's courage to face the incessant grind of editorial work, and makes him sleep well o' nights. I often think what a dreary waste of energy it would be to edit a dental journal for a select body of stoics. After all, sentiment does count for something in this good old world of ours yet, even though we hear dire dissertations on the lamentable commercialism of the age, whereby everything noble and generous and worthy is supposed to be going straightway to the dogs—wherever that may be.

And so each month I wish to talk a bit in a somewhat familiar strain with my readers. I want to throw off—if I may—the formality with which tradition has hedged about the editorial department proper. I want to feel free to use the offhand first personal pronoun instead of the ponderous “we,” and accordingly I have introduced this department which shall be known as the “Editor's Desk.”

This is between you and me. It is where we meet each month and clasp hands and slap each other—not too hard I hope—on the back. It is where we descend together to mother earth for a minute and forget that we are dentists—or rather we remember that we are something besides being dentists. Not that I by any means lay an embargo on the discussion of dental topics in this department whenever the occasion seems to require it. I suppose that most of the subjects will have a dental bearing, and yet if impulse so dictates I wish to feel at liberty to say something along lines not too ultra-professional.

I hasten to make one promise. I shall say nothing mean of any man—unless he invites me to—and I shall probably not do it then. I always prefer to leave that for the other fellow to do—it is safer. Besides, he usually likes to do it better than I do.

In short, this department is intended to give some pleasure without much pain. I shall try to make it as entertaining as I can, and—well I was just going to ask for suggestions along this line, but I have thought better of it. I do not want any suggestions—no, that is not what I mean. I mean that I do not *ask* for any suggestions. I never made a request of my readers yet that they did not grant, and if I asked for suggestions I should get more than I could well accommodate. And woe betide the editor who would fail to adopt suggestions when once he had invited them. No, I am not inviting any suggestions. I am simply going to do the best I can, and if you see wherein I may improve the department, please write—but if I am not careful I shall be asking for suggestions yet. It seems so difficult to get along in this world without leaning more or less on one another. I expect to lean a good deal, on my readers; it has ever been my natural impulse to seek the confidence and counsel of my friends, and I trust all of my readers may become my friends. But in this one instance remember I'm firm as adamant—you need not send me any suggestions—unless you want to. Of course I need not assure you that in case you find it in your hearts to offer suggestions I shall always be glad to get them. And I shall take pleasure in following them too—if I can.

What more need be said to place reader and editor on a familiar footing? Now that the die is thus cast let us unite to make this department of the greatest possible pleasure and profit to all concerned. I promise to do my part to the best of my ability, and if you will do yours, even to the small extent of reading what the department contains, then I feel sure the arrangement will not be altogether devoid of mutual interest.

Let's shake hands and wish each other well for the next twelve-month.

REVIEWS AND ABSTRACTS.

ORTHODONTIA. A text-book for the use of students in dental colleges and a hand-book for dental practitioners. By J. N. McDOWELL, D. D. S. E. H. Colgrove, Publisher, Chicago.

Possibly one of the most complete text-books that has yet been written upon the subject of orthodontia has recently appeared from the pen of Dr. J. N. McDowell, of Chicago. It covers 256 pages of well-printed matter and is profusely illustrated and thoroughly indexed.

The richness of its illustrations and the excellence of the work indicate that no expense has been spared to make it what the author evidently intended, the most complete work of its kind to date.

The scope of the work ranges from comparative dental anatomy to appliances for regulating teeth.

In no similar work has so much space been given to that important subject, comparative dental anatomy. The author has devoted three chapters to this subject alone, thus emphasizing its important and fundamental connection with the subject matter. This is a hopeful sign in that this much neglected subject, heretofore comparatively unnoticed, is beginning to receive the attention it deserves in dental literature.

The chapters upon occlusion are pregnant with interest. Five chapters are devoted to the form, function and occlusion of the teeth of lower animals and man. As the author says: "To understand occlusion is to understand the basic principles, the foundations that sustain the relationships of the teeth of one arch to another." This statement justifies the space given to this important subject in the book.

The "classification of malocclusion" is a slight modification of that given to the profession by Dr. Angle. In this classification prognathism is considered a misnomer, as it only means the protrusion of both upper and lower jaws. The terms "retrusion" and "protrusion" are given the preference and not without good reason.

Four chapters are devoted to various methods that have been employed from time to time for the regulation of teeth. Due credit has been given to each method bearing the name of the one responsible for it.

The three chapters given to appliances, together with their generous illustrations, would seem invaluable to the student and practitioner alike.

Many will find the chapter "Making Appliances" of most interest because of its practical application.

There is no step, after having decided upon the appliance to be used, but what is given notice here. Every detail seems to be covered and everything indicated to be used and how to use it is given attention. A passing reference is made to the etiology, and to Dr. E. S. Talbot's exhaustive work in this direction.

"Jumping the bite," that wholly unscientific term that has served its purpose must give way for "transition of occlusion" in this work. Much interesting reading is presented in this connection, and many useful hints as to prognosis in its treatment are given under "possible age," "probable age," and "impossible age."

An entirely new departure, so far as the printed books upon this subject are concerned, is the chapter upon "The X-ray."

In most cases, it may be said, this agent is indispensable for complete and thorough work.

The chapter upon "Retention" is exhaustive and worthy of the closest reading.

Altogether this is a commendable work and should appeal to the student at once. It is alike valuable in its *suggestiveness* to the practitioner. We can see no good reason why it should not become a text-book in our dental schools—and we trust we are not doing any injustice to any previously published book upon this subject when we say it is the most comprehensive work of its kind that has fallen into our hands.

C. E. BENTLEY.

PRINCIPLES AND PRACTICE OF OPERATIVE DENTISTRY. By JOHN SAYRE MARSHALL, M. D. Dental Surgeon United States Army; President Army Examining Board for Dental Surgeons. Published by J. B. Lippincott Company, Philadelphia and London. 1901.

This is the result of twenty-five years of experience and observation by the author. It contains over 600 pages of most valuable information and is very well illustrated. Every practitioner and student who wishes to keep abreast of the times should purchase this book. Dr. Marshall has had the assistance of Dr. Vida A.

Latham in illustrations, Dr. F. B. Noyes and others to whom he expresses thanks. As a class room book it is orthodox and expresses in a general way the individual opinion of the author which, in our judgment, is the true experience of the successful teacher. This is a handsome specimen of book making. Price, cloth, \$5. Pages, 635.

BOOKS RECEIVED.

REGIONAL ANATOMY OF THE HEAD AND NECK, for students and practitioners of dentistry. By William T. Eckley, M. D. and Corinne Buford Eckley, M. D., with twenty plates in black and colors, and thirty-six illustrations in the text. Lea Brothers & Co., Philadelphia and New York.

MEMORANDA.

Dr. R. N. Laurance, of Lincoln, Ill., visited Chicago in December.

DENTAL SCHOOL AND HOSPITAL IN SYDNEY, N. S. W.

A dental school and hospital in connection with the Sydney University has been opened.

Dr. E. K. Wedelstaedt, of St. Paul, made a flying trip to Chicago early in January. He said "Hello" to us on the Palmer House stationery, and that is all we saw of him.

Dr. A. B. Clark, president of the Chicago Dental Society has left Chicago for Honolulu. In his absence the chair is being acceptably filled by the vice-president, Dr. Geo. B. Perry.

Dr. J. D. Patterson, editor of the *Western Dental Journal*, called at Chicago on his way to Pittsburg to attend the Institute of Dental Pedagogics. Dr. Patterson has been so long an editor now that he is entitled to be called a veteran. And what a sturdy veteran he is! When Dr. Patterson puts his two feet firmly on the ground and takes a stand on principle, you may depend on finding him precisely on that spot one hundred years hence. And that's the kind of a man we like.

DEATH OF DR. WILLIAM TAFT, JR.

From newspaper reports we gather the information that Dr. William Taft, Jr.—grandson of Dr. Jonathan Taft—died in Manila, P. I., in November, 1901, from an accidental overdose of morphine. He had been at Manila only a few months and was associated in practice with Dr. Ottofy. He was a promising young man and his death is a sad event.

CLINIC OF THE G. V. BLACK DENTAL CLUB.

The G. V. Black Dental Club will hold its third midwinter clinic in St. Paul on February 20, 21, 22. All dentists are cordially invited to attend.

J. M. WALLS, *Secy.*

ILLINOIS STATE DENTAL SOCIETY.

Bear in mind the State society meeting in May. Springfield is always a good place to meet, and the various committees are at work to make it a success. Cross off the time on your appointment books now and begin preparation for the meeting.

PORTRAIT OF THE LATE PRESIDENT M'KINLEY.

The Arlington Chemical Co., of Yonkers, N. Y., have had prepared a very striking portrait of the late President, and are sending it out to members of the profession, with suggestions as to the most appropriate manner of framing it. It is really a work of art and is in every way worthy of its great subject and of the firm who publish it.

DENTAL CONGRESS IN 1903.

Dr. Burton L. Thorpe, president of the Missouri State Dental Association has sent out a communication to the effect that this association has appointed a committee for the purpose of promoting an International Dental Congress in 1903 at St. Louis, and suggesting the plan and scope of such a meeting. It is a matter which should be carefully considered by every thinking dentist.

APPOINTMENT ON THE ARMY DENTAL CORPS.

Dr. Alexander Porter Bacon, of Michigan, has been examined for appointment as Contract Dental Surgeon and approved. He has been ordered to Havana, Cuba, to the station recently occupied by Dr. Robert W. Morgan, Examining and Supervising Dental Surgeon, now at home on a three months' sick leave. There are now but two vacancies to be filled in the dental corps.

ANONYMOUS.

THE DENTAL REVIEW is in receipt of an anonymous communication asking for information relative to the degree held by one of our State officials. It must be patent to all that anonymous letters cannot be answered in a public journal. This is a written or an unwritten law of all publications, but if our correspondent will kindly send us his name and address we will take the greatest pleasure in acceding to his wishes.

THE DENTAL ERA.

Drs. J. H. Kennerly and H. Prinz, of St. Louis, have established a monthly dental journal under the above name, and the first issue is before us. It is a clean and promising journal and the DENTAL REVIEW sends greetings, and welcomes the new recruit to the ranks. We trust it will have a full measure of success, and only about half a measure of the ordinary discouragements and disappointments usually attendant upon dental journalism.

J. Ross Hardy, D. D. S., of San Diego, Cal., says: "It is my custom to prescribe five-grain antikamnia tablets in cases of acute pain in the treatment of

abscessed teeth, both before and after their extraction. In cases of very severe pain, I prescribe one tablet every half hour until three are taken and I have always had the best effects to follow their use.

"Of late I have also been using antikamnia and codeine tablets in cases of severe odontalgia, and they have relieved promptly. They were effectual in cases which nothing else would relieve. A crushed antikamnia tablet placed in the socket after extraction and covered with a bit of cotton eased the pain wonderfully."

Dr. A. H. Thompson, of Topeka, Kan., visited Chicago during the holidays and spent his leisure time in attending the meetings of the Folklore and Anthropological Societies at the Field Museum. He also put in four days examining the Peruvian skulls in the museum—at least, that is what we think he did. We have the statement in his own handwriting, and so we are not altogether certain of it. We have met only one individual who could read Dr. Thompson's writing with any kind of proficiency, and that individual was not Dr. Thompson either. It is a current bit of information that if the Doctor allows his writing to get cold he is wholly unable to make it out himself without the aid of a mind reader. But to read his articles in print no one would ever accuse him of being a poor writer.

NORTHERN INDIANA AND SOUTHWESTERN MICHIGAN DENTAL SOCIETIES.

At a bi-State meeting of the Northern Indiana and Southwestern Michigan Dental Societies, in September, at Goshen, Ind., the following officers were elected for the ensuing year: For the Northern Indiana Society—President, F. G. Conklin, South Bend, Ind.; vice-president, F. M. Burkett, Plymouth, Ind.; secretary and treasurer, M. A. Payne, Wabash, Ind. For Southwestern Michigan—President, Dr. C. R. Rowley, Chicago, Ill.; vice-president, Dr. Ruel M. Speer, Battle Creek, Mich.; secretary and treasurer, Dr. C. W. Johnson, Lawton, Mich. The next convention will be held at South Bend, Ind., September, 1902.

M. A. PAYNE, *Secretary*.

PRESIDIO, S. F., CAL., Dec. 26, 1901.

DR. A. W. HARLAN, EDITOR DENTAL REVIEW, Chicago, Ill.

My Dear Doctor:—Permit me to thank you in the name of the Army Dental Corps for the article appearing in the December number of your journal which advises all dental societies to honor the army dental surgeon with the privileges of membership, without dues, while stationed in the neighborhood of these societies. This was very thoughtful of you, and will be highly appreciated by the corps.

With compliments of the season, I am,

Very sincerely, JOHN S. MARSHALL, M. D.,

Contract Examining and Supervising Dental Surgeon, U. S. Army.

THE SOCIETY OF DENTAL SCIENCE.

A new society has been organized in St. Louis with the above name. The members are not limited to dentists only, but embrace specialists in all the collateral sciences, such as rhinology, art—as related to the study of the face—law, to oculists, aurists, specialists in pyorrhoea alveolaris, orthodontia, oral

surgery, general surgery, and special chemists. The membership includes the ablest representatives of their various sciences in St. Louis, as well as those in dentistry who are studiously inclined.

Dr. Edward H. Angle is one of the prime movers in the organization, which is a guarantee that the subject matter to be brought before it will be of a high order. THE DENTAL REVIEW has been selected as the medium of publication for the papers of this society, and we hope to present some of them to our readers at an early date.

ROYAL HONORS FOR DR. READ—FLOWERS FOR LATE AMERICAN DENTIST.
FRIEND OF EUROPEAN ROYALTY.

COPENHAGEN, Dec. 30.—Royal honors will be paid to the remains of Dr. Allanro Read, the American dentist, who had resided here since 1860, and who died last night.

Dr. Read was a native of Pennsylvania and occupied much the same position here as the late Dr. Thomas W. Evans, of Philadelphia, did in Paris. He was patronized by the royal family of Denmark, the royal family of Sweden, the dowager empress of Russia and Queen Alexandra, and enjoyed the friendship of members of various royal families, diplomats and other notabilities. The deceased declined to accept a title and other honors and retained his American citizenship. Wreaths from the royal family of Denmark will be deposited on Dr. Read's coffin on the day of the funeral.

ODONTOGRAPHIC SOCIETY.

At the annual meeting of the Odontographic Society held Monday, December 16, 1901, the following officers were elected for the ensuing year: President, C. N. Johnson; vice-president, W. T. Reeves; secretary, Frank H. Zinn; treasurer, Geo. N. West. Board of directors, Geo. B. Perry, F. E. Roach, L. O. Green. Board of censors, F. B. Noyes, W. Girling, D. A. Hare. Program committee, C. E. Bentley, L. S. Tenney, H. J. Goslee. The fifteenth anniversary of the society will occur in December, 1902. It is the intention of the society to celebrate the event by giving a rousing clinic extending over two days and a meeting that will be memorable in its history.

Prominent members from all parts of the country are to be invited to be present. The program committee have already commenced plans for one of the most notable meetings that has been held in this country.

FRANK H. ZINN, *Secretary*.

100 State St., Chicago.

NEW JERSEY STATE DENTAL SOCIETY.

The Committee on Exhibits desires to announce that at the thirty-second annual meeting of the New Jersey State Dental Society, to be held, as usual, in the "Auditorium," Asbury Park, July 16, 17 and 18, the large room, which is especially adapted for exhibition purposes, will be devoted exclusively to the exhibits. Every advantage is here offered for a great display, with all the conveniences necessary for such an exhibition.

This will undoubtedly be a "big year," and especially so from the exhibit standpoint, as many exhibitors have already written to secure the space generally selected by them.

A great inducement offered to all exhibitors is the fact that at last year's meeting over five hundred dentists registered at the entrance to the exhibit hall.

The names of the exhibitors selecting space prior to the program going to press will be mentioned therein, together with the nature of their display.

It is earnestly requested that those desiring space communicate with the chairman at an early date.

FRANK L. HINDLE,

New Brunswick, N. J.,

Chairman of the Committee on Exhibits.

NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

Next meeting, Kimball House, Atlanta, Ga., February 18, 1902, will be the largest meeting since its organization—you have often heard that, this time it will be true. A representative gathering in a representative city of the South. The manufacturers will be on hand with all the latest appliances. Everything electrical, everything in porcelain, everything in crown and gold work, etc.

Many of the greatest educators of the country will be there and give valuable clinics, equal to a post-graduate course. The chairmen of committees are organized and working as never before. Their reports will be a review of dentistry for a year.

The fitting close will be a magnificent banquet. Troubles will be drowned and wit, humor and eloquence will flow.

Can you afford to miss it? Of course not. Then come!

C. L. ALEXANDER, D. D. S., *Cor. Sec.*, H. H. JOHNSON, D. D. S., *Pres.*,
Charlotte, N. C. Macon, Ga.

RECENT PATENTS RELATING TO DENTISTRY.

686,613. Dental articulator, Clemens Huberty, Chicago, Ill.

686,764. Toothbrush, Charles W. Richards, San Francisco, Cal.

687,617. Mouth illuminator, Edward Ebi, Cedar Rapids, Iowa.

687,316. Dental blowpipe and lamp, Richard L. King, Pontiac, Ill.

688,237. Dental forceps, Joseph B. Davis, assignor of one-third to H. B. Gessner, Braxton, Miss.

688,088. Dental and surgical chair, Gustav Holtz, Jamesburg, N. J., assignor to American Dental Manufacturing Company, of New Jersey.

687,987. Dental press, Fernando O. Jaques, Jr., assignor of one-half to W. N. Kidder, Providence, R. I.

688,122. Dental disk mandrel, Clayton J. Reynolds, Pittsburg, Pa.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

THE WISCONSIN CASE.

The following is a syllabus of the Supreme Court in the mandamus case between the Wisconsin State Board of Dental Examiners and the graduate of a dental college who made application for a license on his diploma:

No. 158.

State of Wisconsin. In Supreme Court.

State of Wisconsin ex. rel. W. L. Coffey,
Respondent,

vs.

C. C. Chittenden, et. al., constituting the
State Board of Dental Examiners,
Appellants.

SYLLABUS.

1. The scope of mandamus proceedings to coerce a person or board to the performance of a judicial or quasi-judicial duty extends only to compelling such person or board to act, not to directing him or it how to act, unless the underlying facts are undisputed, leaving no reasonable ground for action other than one way.

2. If a person or board is clothed with judicial or quasi-judicial power in the determination of questions of fact and the taking of some specific action upon such determination, and fails to make a proper investigation of such questions, it is not within the function of a mandamus proceeding, predicated on such neglect, for the court to assume and exercise the duty of such person or board and make such investigation.

3. The character of a dental college or other institution of learning at a particular time may be established by evidence of its character at a prior time not so remote but that it would be reasonable to assume that the prior condition still exists. The rule applies that "when the existence of a person, a personal relation, or a state of things, is once established by proof, the law presumes that the person, relation, or state of things continues to exist as before, until the contrary is shown, or until a different presumption is raised from the nature of the subject in question."

4. The character of a dental college in April of one year is evidentiary of its character in May of the next year, and may have sufficient probative force in that regard to reasonably establish such later character.

5. The word "reputable," as applied to dental colleges in the law authorizing the State Board of Dental Examiners to license persons to practice the profession of dentistry, without examination, who have graduated at such a college having certain specified requisites, means *reputable* in the general sense in which the term is ordinarily used; worthy of repute or distinction, held in esteem, honorable, praiseworthy.

6. In passing upon the application of a graduate of a dental college for a license to practice his profession in this State, the Board of Dental Examiners must determine whether his diploma comes from a reputable source as an independent fact, considering the term "reputable" in its ordinary sense and measuring the character of the college from the standpoint of men competent to judge thereof by reason of their scientific attainments in the line of work for which such a college stands.

7. The State Board of Dental Examiners, proceeding reasonably, is the sole tribunal under the statutes to determine the questions of fact to be solved, precedent to the licensing of a person to practice the profession of dentistry in this State.

8. When a graduate of a dental college applies to the State Board of Dental Examiners for a license to practice his profession, the burden of proof is upon him to establish the reputability of such college.

9. The State Board of Dental Examiners, having once determined the character of a dental college, may properly consider all questions in regard thereto at rest till, by lapse of time or otherwise, some reasonable ground exists for believing that its character may probably have changed.

10. The State Board of Dental Examiners, having once determined the character of a dental college, within all reasonable limits, when and under what circumstances the subject shall be reexamined rests solely in its discretion.

11. Since the law does not define the method by which the State Board of Dental Examiners shall proceed to determine the reputability of a dental college when that is material to its official action, such board may perform its duty in that regard in any reasonable way it may deem proper, and candidates for licenses to practice the profession of dentistry must submit to its judgment so long as they are within the boundaries of reason and common sense.

(Syllabus by MARSHALL, J.)

OBITUARY.

CHARLES J. ESSIG, M. D., D. D. S.

Died, at his suburban residence, Wallingford, Pa., December 2, 1901, from pneumonia, Dr. Charles James Essig, in his sixty-first year.

The announcement of Dr. Essig's death came so suddenly that it caused a profound shock not only to his intimate friends in the immediate neighborhood where he lived but to the profession generally. He was so well, and so favorably known that his taking off was more than an ordinary event in the history of the profession he loved.

The following chief events of his life are culled from a sketch in the January number of the *Dental Cosmos*, and from a very appreciative article by his close personal friend, Dr. T. C. Stellwagen, published in the *Dental Brief*.

Dr. Essig was born in Philadelphia July 23, 1841. He began the study of dentistry in 1857, and subsequently conducted a dental laboratory for several years. In 1870 he formed an association with Dr. Louis Jack which continued five years. In 1871 the degree of doctor of dental surgery was conferred upon him by the Philadelphia Dental College, where he had been an instructor in prosthetic dentistry. Later he became associated with the Pennsylvania College of Dental Surgery as professor and was for some years its dean.

In 1876 he graduated from the Jefferson Medical College. In 1878 he helped organize the dental department of the University of Pennsylvania and was its first secretary—afterward its dean. In 1882, owing to increased duties, he resigned his position as dean, but retained his professorship of mechanical dentistry and metallurgy until July, 1901.

His first publication in book form was a treatise on "Dental Metallurgy" in 1882. This was followed in 1897 by the "American Text-book of Prosthetic Dentistry," a collaborative work which remains his chief monument in a literary way to the profession.

Dr. Essig was a leading member of the following societies: The Odontographic Society of Pennsylvania, the Pennsylvania State Dental Society, the American Dental Association, the Odontological Society of Philadelphia, and the Academy of Stomatology of Philadelphia.

Dr. Essig was married in 1868 to Miss Mary Sturges, and his widow with two sons—Dr. Norman S. Essig and Dr. George S. Essig, both dentists—survive him.

"As son, husband and father he was an example of absolute purity, loving faithfulness and generous devotion. He carried to the grave the love of the few survivors of his early friends and the affectionate regard of the hosts of those drawn to him by the magnetism of his rare personal qualities during his long and honorable professional career."

THE DENTAL REVIEW.

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No. 2

ORIGINAL COMMUNICATIONS.

JURISPRUDENCE.*

BY JUDGE SELDEN P. SPENCER, St. Louis, Mo.

Medical jurisprudence, or legal medicine, or forensic medicine, as it is differently styled by various writers, is that science which treats of subjects belonging at the same time to both medicine and law. It has, therefore, to do with the application of medical knowledge to the purposes of law, as well as with the application of legal principles to the science and practice of medicine.

In this connection it may be well to review the exact status of the dentists in the State of Missouri. The question has only been inferentially decided—once by the courts and once finally by the legislature.

Prior to 1895 "every person exercising the functions of a practitioner of medicine" was exempt from jury duty. Notwithstanding this provision of the statute, the then jury commissioner incorporated in his list of jurors many of the practicing dentists in the city of St. Louis, and a proceeding was instituted to relieve them from this duty, on the ground that they were included in the provision of the statute which had just been quoted.

The Supreme Court of Missouri, sitting in banc, decided by a majority of one that dentists were not included in the term "practitioners of medicine," and therefore could not claim exemption under that provision of the statute. Three judges, including the Chief Justice, dissented from the opinion, stating in their dissenting opinion that "while dentistry as an independent calling may have had an humble and comparative recent origin, it has now become a very important branch of medical science"; and concluding with

*Read before the Society of Dental Science.

the statement that "he (a dentist) is within the purview of both the letter and reason of the law that exempts a practitioner of medicine from jury duty and should have a peremptory writ commanding his discharge."

When the legislature of 1895 met they amended the law concerning jurors to read as follows: "No person exercising the functions of a practitioner of medicine (all persons lawfully practicing as aurists, oculists, dentists or other specialists being included in the term "practitioner of medicine") shall be compelled to serve on a jury."

By inference the legislature has included dentists with aurists, oculists and other specialists as "practitioners of medicine," and in this paper whenever the term "physicians" is used it is intended to include within its meaning practitioners in every department of medicine.

Medical jurisprudence as a science is so old that the memory of man runneth not to the contrary. From the days of the Jewish patriarchs down to the times of the Egyptian Pharaohs and Roman emperors, even to our own day, there has been an ever-increasing intimacy and counter-dependence between the great principles and practice of law and medicine.

Physicians had much to do with the formation of Roman laws on subjects which were within the physician's profession. "On account of" or "by authority of" the most learned Hypocrates is often found in Roman decrees as the basis of and reason for laws which needed no higher authority as to their necessity than the approval of that great physician. And from the time when the physician Antistius examined the wounds of Julius Caesar, inflicted by his quondam friend, Brutus, and gave expert testimony that of the twenty-three wounds which Caesar received but one was mortal, and that one had penetrated the thorax between the first and second ribs, even until this day the learned men of the medical profession have been repeatedly called in to most materially assist by their opinion in accomplishing the punishment of the guilty and in freeing from the stain of suspicion the innocent, and in the settlement of a vast number of civil subjects hardly less important.

The law stands helpless either to punish the guilty or to free the innocent in a multitude of cases until medicine has come to its aid. Did the dead body found on the river bank come to its end by drowning, by assault, by poison or in some other manner? Was an abor-

tion performed on the helpless girl found dying? Is the man who killed his neighbor responsible for this act? Could the testator whose will leaves with a penny his helpless family and leaves thousands to ungrateful friends and acquaintances be of sound mind and disposing memory? Was the child born alive? What physical injuries did the accident cause? These are all questions upon which hang life and death, freedom and imprisonment, acquittal or disgrace, justice or injustice; and unless the physician brings his special training to the front, the law must grope in darkness, often unjustly, because it is compelled to act in ignorance. The body of Dr. Parkman, murdered by Prof. Webster, was identified in part by the dentist who had taken a cast of the lower jaw of Dr. Parkman before his death, and from which he identified the fragments of the jaw which were found in the stove where the head had been consumed. The exact stature of the murdered man was ascertained by the physicians, though the greater part of the body had been entirely destroyed. The body of King Charles I. of England was identified when subsequently exhumed many years after his death by the smooth corresponding surfaces of the fourth cervical vertebra, showing that they had been separated by some heavy, sharp instrument.

Thomas Bowman was condemned some years ago in England for the murder of a child by pushing an awl into its head. The body was exhumed and examined by the coroner, when the identical hole was found made by the awl as the witness had stated.

Mr. Sheldon, an eminent surgeon of Exeter, having heard of the case, volunteered his services, examined the skull and was satisfied that the hole was a natural foramen through which a vein passed. He satisfied the jury of the correctness of his opinion by pointing out the enamel uninjured around the hole, which would not have been the case had the hole been made by the awl.

He exhibited several skulls all having similar perforations, and each hole having a similar channel with polished rims and sides of enamel. This expert service of the physician saved the man's life.

To physicians, even as to those who by their calling have to do with the eternal welfare of mankind, the law stretches out its hand to stay any question in any case at court which may require by its answer the divulging of what has been learned from patients in the treatment of their diseases. Sacred are the confidences of the patient and physician; and in this State no power can compel you to make them public.

It is interesting to note the difference between the laws of different countries in this particular. While in France it is made a misdemeanor for a physician under any circumstances to disclose the confidential communications which have passed between himself and his patient; in England a physician is compelled to answer any question that may be asked of him in a court of law, no matter how confidential the communication it may disclose.

Professor Tidy in his work on "Legal Medicine" has well said of the English law that "the highest legal authorities in England have decided that medical men enjoy no special privilege with regard to secrets of a professional nature; in other words, no practitioner can claim exemption from answering any question because the answer may or would involve or even implicate the character of his patient; it is the law, and though it may be defended on legal grounds, we think there are few medical men who would not prefer to sacrifice their professional practice to their honor. It seems a monstrous thing to require secrets affecting the honor of families to be dragged into the garish light of a law court, there to be discussed by rude tongues and unsympathetic hearts."

In this country a medium rule applies; for while no power can compel a physician to disclose the confidences entrusted to him in his professional capacity, nevertheless if the patient for whose protection the confidence is protected has no objection to the disclosure, he may then be required to answer.

The law very strictly lays down the qualifications necessary to be fulfilled before a man can practice medicine in any of its departments, with special requirements to be fulfilled by those who intend to practice dentistry. In many States it is provided that not only shall a failure to comply with the necessary conditions be punished by fine or imprisonment, but further that claims for professional services rendered by unlicensed dentists shall not be collectable by judicial proceeding.

The right of the State to thus regulate the medical profession has been repeatedly upheld, as may be seen from the following brief extract from the opinion of the Supreme Court of Indiana:

"The practice of medicine and surgery is a vocation that very nearly concerns the comfort, health and life of every person in the land. Physicians and surgeons have committed to their care the most important interests, and it is almost imperious necessity that only persons possessing skill and knowledge should be permitted

to practice medicine and surgery. For centuries the law has required physicians to possess and exercise skill and learning; for it has mulcted in damages those who pretend to be physicians and surgeons, but who have neither learning nor skill. It is, therefore, no new principle of law that is asserted in our statute. It is, no one can doubt, of high importance to the community that health, limb and life should not be left to the treatment of ignorant pretenders and charlatans. It is within the power of the legislature to enact such laws as will protect the people from ignorant pretenders and secure them the services of reputable, skilled and learned men, although it is not within the power of the legislature to discriminate in favor of any particular school of medicine."

The additional charge of a criminal nature arising from the practicing or attempting to practice without a license will be noticed later on in connection with the subject of malpractice.

A dentist may, of course, contract specifically to accomplish a given result in the treatment of diseases of the oral cavity, or in the performance of any given operation, and the law will hold him to his contract unless he has contracted to do an impossible thing, in which event forfeiture of all compensation would be the limit of his liability. For example, if a dentist agreed to crown a tooth so that it would be strong and serviceable for at least two years, he would be required to fulfill his contract, and damages for a breach of it might be obtained on the one hand, while on the other he could claim no compensation for his services unless the contract had been fulfilled. Such agreements are, however, unusual, and in the absence of any express agreement all that the law requires of the practitioner of medicine in any of its departments is to possess and exercise such skill and experience and learning in treating the disease or performing the operation which they hold themselves out to the public as being able to undertake, as is ordinarily possessed by men of their profession in the locality where they practice and at the time when their services are rendered, and to exercise in every case his best judgment in the treatment of his patient. Practitioners in cities are, therefore, held to a more strict accountability than are practitioners in distant parts of interior counties.

The liability of the practitioner of to-day is greater than it was ten years ago. The law requires a dentist to keep abreast of the improvements and advanced learning of both medicine and dental

surgery to the extent at least of possessing that learning and skill of the average practitioner in the locality where he practices.

Dentists may for good cause refuse to undertake cases that are submitted to them, or decline to receive as patients those who come to them for their professional services. They are not required to undertake any case unless they desire. But every patient who has been received by the dentist is entitled to the care and diligence and skill in the treatment of his trouble which the dentist is presumed in law to possess and to give.

Dentists cannot, therefore, willfully abandon cases without making themselves liable in damages; nor can they turn over their cases to other dentists without the consent of the patients and escape liability.

Dentists are entitled, in the absence of any express or agreed contract, to what their services are reasonably worth, having in mind the locality in which the services were rendered.

It was once the rule of medicine, as in law, that all employment was wholly honorary, and it has been held in England that a physician (that is, one licensed by the College of Physicians) could not recover for his services on the ground that they are honorary, and that he must depend on the sense of gratitude of his patients, which has its enforcement in the code of morals, but not in the courts of law, but that the medical practitioner, or, as he is known in the courts of England, an apothecary, might recover for his services. No such fine distinction, however, has been made in this country, and since the twenty-second year of the reign of Victoria it has not been made in England.

They are, as a rule, the sole judges of the number of visits which may be necessary, and of the work to be done; for when a patient entrusts himself to the hands of his dentist the law obligates him to pay for whatever the dentist, in his best judgment, may think the case reasonably requires.

And it may also be well to remember that in a partnership of dentists each member of the partnership is financially responsible for any damage which may result by reason of the incompetence, neglect or lack of diligence on the part of any one of his partners in the practice; for it is an established rule of law that one partner is responsible for the acts of all of his partners, and the reason is alike applicable to partnerships of professional men as to partnerships in commercial matters.

Civil malpractice may be defined as the absence of that skill or diligence or care or judgment in the treatment of diseases or in the performance of operations which, as has been shown, the law requires every practitioner in medicine to possess and exercise.

Physicians following special branches are required to possess greater skill along the line of their specialties than general practitioners would be required to possess in the same lines, but no physician is liable at law for any damage that may result from causes such as hereditary traits in the patient or hidden diseases which the physician could not in the nature of the case be reasonably expected to know.

A physician is entitled to have his treatment and operations judged by the standard of the school to which he belongs. An allopath must be judged by the practice of allopathy, and a homeopath by the practice of homeopathy; and where the treatment of an allopath is called into question, it is incompetent to judge it by what a homeopath would have done under the same circumstances. The follower of each school must be judged by the principles of the system or school to which he belongs, and under which he has held himself out to the public as able to treat their diseases, remedy their injuries or alleviate their sufferings. This rule, however, does not apply to systems which in law have no actual standing as schools of medicine, and could not, therefore, be urged in favor of faith cure or mesmerism; for no one of such systems has ever been recognized by the law as a distinct school of medicine.

Physicians are not responsible for any damage which may result to a patient because of the patient's failure to conform to the regulations laid down by the physician, and where damage results to the patient, partly because of the patient's inability or refusal to conform to the physician's requirements, and partly by reason of the physician's own lack of skill, the physician is entitled to the benefit of the doubt and cannot be held for such damage resulting from the mixture of the two causes, unless the damage resulting from his own lack of skill can be positively separated from the other.

Physicians are responsible for the neglect or carelessness or ignorance or inability of their assistants.

Remembering the standard which the law requires of all physicians in all departments of medicine, it may be well illustrated by the case of a physician or dentist in the administration of an anesthetic.

It has been said that the condition of anesthesia is one of the most grave conditions of life, and, by suspending more than half of the vitality of a human being, it comes so near to death that it is wonderful indeed to reflect how near the boundary line can be approached and yet be so rarely passed. The issues of life and death are confined to within a narrow limit, and when to this is added the fact that the result rests entirely in the hands of the physician in charge, it is difficult to understand how its importance can be overestimated.

In the administration of an anesthetic the law would require a knowledge—first, of the physiological action of those functions with which the anesthetic interferes; second, of the way in which the anesthetic naturally acts; third, a knowledge of the symptoms which indicate danger; fourth, a knowledge of the condition of the patient necessary to a favorable administration of the anesthetic; fifth, a knowledge of the means to be employed in resuscitating the patient in case of need.

The mere fact that statistics have shown that one death results in 2,873 administrations of chloroform; that only one death results in 23,204 administrations of ether; and only three deaths in 300,000 administrations of nitrous oxide, while it proves the comparative safety in the administration of anesthetics, shows also how great blame may be placed on the physician whose failure to take every precaution results in the death of the patient.

It may be well to remember that an anesthetic should only be administered in the presence of assistants and friends, especially when given to women.

Physicians who prepare their own medicines are held to the same strict law which applies to druggists, and which requires vendors of drugs to be responsible for the absolute purity of what they sell. That a physician may have made careful examination and exercised every precaution to select only pure drugs is no excuse if damage results from the impurity of the drug. They are guarantors of the purity of the drugs which they dispense.

It is true at law that a seller of provisions for domestic use must know at his peril that what he sells for home consumption is healthful and wholesome, and he is liable for any injury which may result from any impurity. The butcher is required at law to guarantee the purity of his meat; and the miller the wholesomeness of his flour, and the grocer the wholesomeness of his provisions.

How much more ought the vendor of drugs and medicines to be held to a strict accountability for the purity of that which he sells! For if the law has deemed it necessary to protect the citizen against impure food and drink, the impurity of which can in a great many cases be detected by the sense of taste or smell by the purchaser, how much stricter should be the requirements of those who deal in compounds, the very ingredients of which are unknown to the purchaser, and which, though capable of great injury, bear no mark on their face of the great danger in their use, and which, therefore, have to be received in implicit faith, both in the integrity and carefulness of the man who furnishes them?

There are two other forms of malpractice known in medical jurisprudence to which I might briefly refer: One known as ethical malpractice, which may be defined as the ethical treatment of medical men by medical men, either by oral or written statement, or by their conduct.

The law will not allow one medical man or medical association to call another medical man a quack or charlatan merely because his code of ethics or practice may be different from the one who makes himself judge in the matter. However medical societies may regard physicians who do not subscribe to their code of ethics, either in regard to advertisements or other matters, nevertheless they are not justified in treating such medical practitioners as being incompetent or unskilled in their profession, and an action for damages would undoubtedly lie in favor of the injured physician for any act which tended to bring him into disgrace or ridicule in his profession when no other grounds for the charge existed than a difference as to the code of ethics.

Criminal malpractice is such misconduct on the part of a physician as will be inquired into by the law of its own motion. No case of either civil or ethical malpractice can ever reach the court, unless the party injured himself makes complaint and brings the action; but in criminal malpractice the law, for reasons of its own, will not allow the guilty physician to go unpunished.

When a physician treats a case or performs an operation with such gross negligence or carelessness or ignorance as to cause death, he is guilty of criminal malpractice; and likewise, when he intentionally performs any professional act which by law he is forbidden to do and death results, he is guilty of criminal malpractice.

If a physician in the perpetration or attempt to perpetrate a mis-

demeanor causes the death of a human being, he is guilty of manslaughter. The importance of this provision is manifest when it is remembered that practicing without a license is a misdemeanor; and, therefore, if a physician, while so practicing without a license, or is guilty of a lack of that skill or knowledge which the law requires him to possess, and death results, is guilty of manslaughter, while the licensed physician guilty of the same negligence could only be held liable for such civil damages as might result from his malpractice.

I shall not at this time further trespass upon your time in the consideration of the subject which has been assigned to me. There are many divisions of it which have not been referred to. Perhaps enough has been said to show how intimate are the relations between the two great sciences of medicine and law. No lawyer is well equipped for his profession without a general knowledge of those principles of medicine which have to do with the principles and administration of law. May it not also be well for students and practitioners of medicine to incorporate among the subjects with which they should be professionally acquainted the general principles of law that are applicable to the study and practice of medicine?

THE PRESIDENT'S ADDRESS.*

BY FORREST H. ORTON, D. D. S., ST. PAUL.

The honor of bidding you all a cordial welcome has fallen upon me and I do so most heartily. It would seem appropriate at this meeting, the first to be held by this society in the new century, to give a short review of the history of the marvelous progress of our profession during the last one hundred years, were it not that almost every dental journal published since the first of the year has contained at least one essay on this topic until the subject has become trite. But not enough has been said of its founders. Possibly those who have attempted to do so were forcibly reminded of the poverty of words in attempting to find praise for the unselfish and untiring energy of our preceptors, who have in the short span of little more than fifty years converted what was not even dignified by

*Read before the Minnesota State Dental Association.

the title of a trade into one of the most specialized branches of medicine. Our past has been phenomenal, our present is great, and I predict that before the present century is many years old we shall see a dental specialist on the staff of every hospital and State institution in the country.

I cannot let this subject pass without referring to the government recognition of dentistry by establishing a dental corps in connection with the army as one of the most important epochs in its struggle for recognition among the learned professions. It is hoped that the experiment will prove the rightfulness of our claim to a position of importance as a department of the healing art, as necessary to the soldier in the field as to the civilian in private life, and that our efforts to secure a commissioned corps will be successful as soon as this new department has been given a fair trial.

Dentistry must make its advances to recognition along the lines of original research and scientific knowledge. Up to the last few years the theoretical part of dentistry was purely empirical. Most, if not all, of the men who have done original work were poor men; they have given freely of their knowledge and every one has profited by their discoveries; by their efforts dentistry has been started on a scientific basis, and if it is to continue on this plane some arrangements must be made which in the future will properly and adequately support those who are willing to engage in scientific work for our benefit. At present there is little incentive and meager facility for a man who has a family to support to use up the little energy that is left after a hard day's work at the chair or in the laboratory in this sort of work. Dentistry is comparatively a poorly paid profession, and the necessary expensive paraphernalia required to do original research work is beyond the reach of most of us; therefore, I would urge upon the Minnesota State Dental Association to take upon itself this important work and devise a plan for the proper agitation of the subject.

Think of the advantage of determining the exact place occupied by the much-talked-of bacteria, besides other things in regard to oral troubles that are yet uncertain. It is humiliating to think of the methods and theories that were practiced in the past without sufficient grounding in facts. Hundreds of remedies, each one more wonderful than the last, have been presented for our use, and few of them would ever have been recommended or used if some one could have taken the time to prove their work before shouting their

almost specific virtues. Note the interest taken in cements, as furnished us by the manufacturers, since Dr. Wedelstaedt discovered that some of them could be entirely dissolved in distilled water; and so on down the line of dental depot products. We may find out the worthlessness of most of the amalgams, cements and antiseptics in time, but think of the *failures* for which *we* are held responsible. It does not help us that we believed the labels on the bottles, so, for self-protection, if not to satisfy ourselves that we can prove our work by scientific laboratory research, we *need* a department of experimental dentistry. Dr. J. Leon Williams championed this subject in his paper, "The Empirical or Scientific." Doctors of medicine have established a chair of experimental medicine at Johns Hopkins', and it has in a degree been the means of revolutionizing medicine. We think we can see in the near future this laboratory supported by the State, and the State has just as much right and need for this as it has for an inspector of kerosene or a bureau of pure food, etc. It should be conducted by specialists or trained investigators who will be able to prove beyond doubt the correctness of our life work.

I have talked with a number of politicians and members of the legislature and they all agree that there will be no trouble in enacting such a law if presented in the proper manner and backed by a sufficient number of dentists. Of course, the idea will seem chimerical at first, but the thought is not a new one. It has been suggested at dental banquets over the cigars and coffee, but in the cold glare of next morning the enthusiasm was gone and the idea seemed utopian. It will require courage and work to start the ball rolling, but after the subject has been agitated it will come to be regarded as a necessity; therefore, let this society have the honor of being the first to present this need of the profession. It may require several years of work to accomplish it, but, if we finally succeed, it will be a lasting honor to us and a great benefit for our profession. We have reaped what our preceptors have sown, and according as we build the future generations will profit.

I beg your indulgence to make a few more recommendations. As it is part of the object of this society to elevate the dental profession to the high pinnacle to which it rightfully belongs, are we not neglecting the young graduate? We are in a sense responsible for him. It should be part of the duty of the membership committee to solicit every successful State board candidate to become a member

of this society, and in this connection I would like to draw the attention of the members of this association to the necessity of increasing the membership until we have enrolled at least a majority of the practicing dentists of this State. This must be done before we can claim to be a representative body, politically speaking, and *this* it is necessary to do to secure dental legislation. I would recommend a standing committee on legislation, as I understand from the president of our State board that an effort was made during the last session to amend the existing law regulating the practice of dentistry in this State, and if it had prevailed the effect would have been to render the law inoperative, thus depriving the profession of any protection whatever.

I desire to congratulate the executive committee upon the excellent program which they have prepared for our benefit. The preparation of a program is an important and serious matter. One of the main reasons why our meetings are attended by such a relatively small proportion of its members is that the interest of the majority have not received sufficient consideration in the selection of material. In making up the program for this meeting your committee has adopted a high plane of usefulness, selecting those subjects which were directly applicable to the practical needs of the busy practitioner.

A METHOD OF OCCLUSION OF ARTIFICIAL TEETH.*

BY EUGENE PETTIT, D. D. S., PHILADELPHIA, PA.

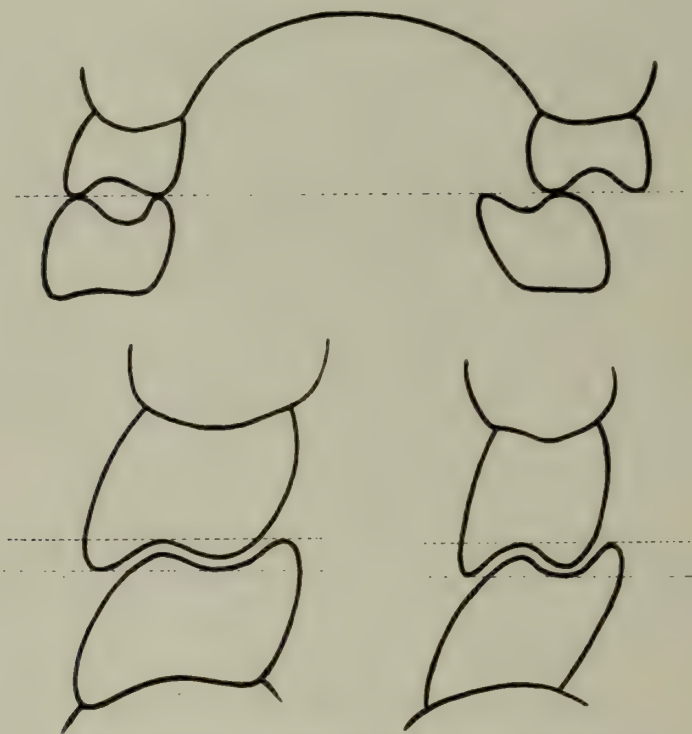
The late Dr. Bonwill considered his "method of articulating teeth" the greatest discovery of his life; and yet this method has not been generally accepted. I heard him say many years ago that "he had then been more than thirty years drumming it into the dental profession and they would not take hold of it." Personally, I feel that I am particularly indebted to Dr. Bonwill for his ideas on this subject, for it was while attempting to put them into practice that I discovered what I believe to be a more practical method. While Dr. Bonwill's scheme is very interesting from a theoretical point of view, the fact of its not being more generally accepted by the profession (a profession, too, most keenly on the alert for advanced methods) proves most conclusively to my mind its impracticability.

*Read before the Minnesota State Dental Association.

Before submitting to you this method of articulation I feel that in justice to myself I ought to state that it has given entire satisfaction to my patients; and I most firmly believe that when it is properly understood by the profession they will unhesitatingly pronounce it an important aid to mastication.

I consider that any method, or principle, that promises to aid us even in the smallest degree to masticate our food with artificial teeth should not be allowed to pass without due consideration and a trial.

While I could refer to a number of cases, I do not deem it necessary to mention more than two—both typical cases.



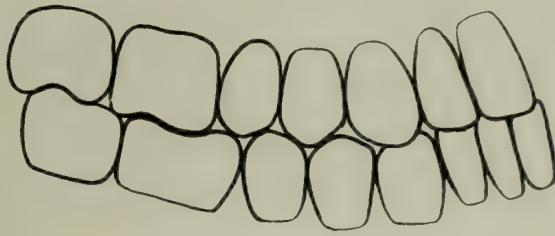
Articulation according to Dr. Bonwill.

Mrs. B. came to me three years ago; she was eighty years old, having worn artificial teeth more than thirty years, but never with comfort. The plates I made her were constructed on this method of occlusion. She volunteered the statement to me that they were the only teeth with which she could satisfactorily masticate her food.

Mrs. P., a woman of fifty years, had worn many sets of artificial teeth, but without any satisfaction. Her husband, a man of means, believed it was possible for her to get something better; and with this idea secured a list of dentists who did their own mechanical work. He called on me, and I explained to him this method. He was pleased, and his wife was highly pleased with the results.

We must bear in mind that, while artificial teeth are not natural teeth, it is of the greatest importance that they should present a natural *appearance*. This much accomplished, their usefulness as masticators becomes paramount.

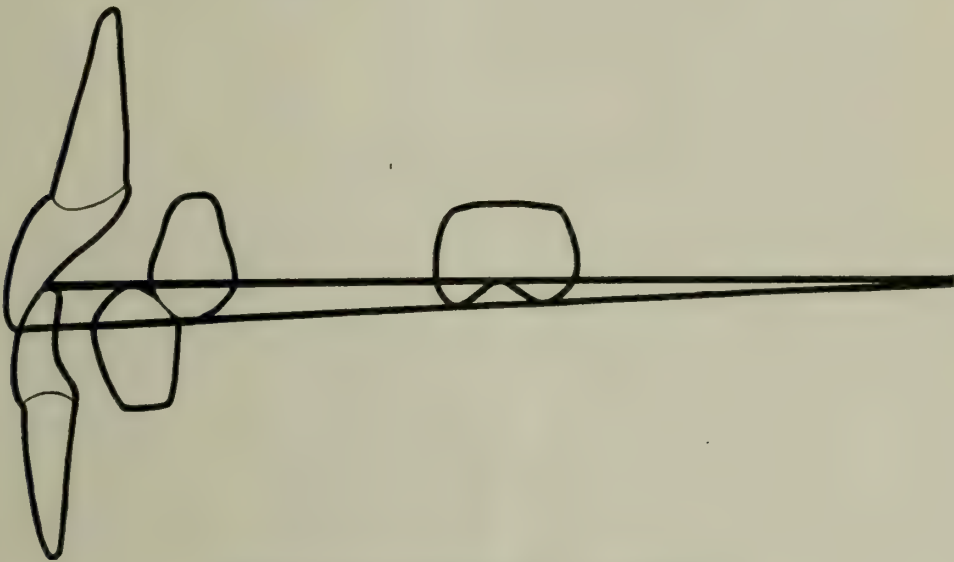
I contend that an artificial denture is only controlled in the mouth as a mass or a block of carved wood. All interlocking of the cusps, and the overlapping of the incisors, I have found to be decidedly detrimental.



Articulation according to Dr. Bonwill.

It is quite natural for persons wearing artificial teeth to speak of them as being perfectly satisfactory. This is simply because they have learned to manipulate them with some degree of success, not knowing that a still more perfect result can be obtained.

The mouth is frequently and correctly referred to as a "mill,"



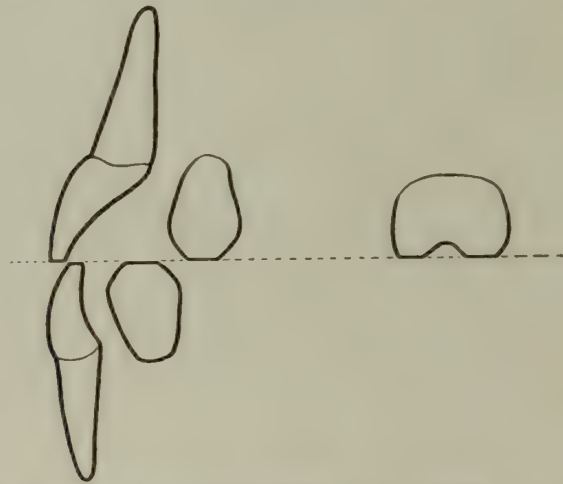
Overbite according to Dr. Bonwill.

and it is as a mill that it should be regarded by every dentist who desires to assist his patients to properly masticate their food; for it is through this grinding process of mastication that digestion truly begins, that food is properly assimilated and man's physical and mental equilibrium established.

How can we convert the mouths of our patients into working

mills? Simply by avoiding everything that will interfere with the grinding action of the teeth and the natural motions of mastication. This, in my opinion, necessitates the doing away with the overlap of the incisor teeth, as well as the interlocking of the posterior teeth, by grinding them to a flat but by no means to a smooth surface. I find that I can do this best by simply holding the cusps against the side of a grindstone and grinding about one-third of the cusps down, setting the upper incisor teeth to project beyond the lower. This will give them the appearance of overlapping.

After the denture is finished, it is placed on the side of a grindstone with a pressure on the incisor teeth; this will grind a sharp cutting edge, and as the lower jaw is pushed forward to cut the food the sharp, angular edge on the buccal surface of the lower teeth



Ground Cusps with no Overbite according to Dr. Pettit.

will come in contact with the sharp ground edge on the palatine surface of the upper teeth, and while masticating the food the tilting of the plates will be reduced to the least possible minimum. I will now give you a few comparative illustrations of the old and what I term a newer method; but before doing so I would like to say a few words about preparing the mouth for the plate. In partial cases where we are obliged to depend entirely upon artificial teeth for a masticating surface, I would always advocate opening the bite until the remaining natural incisors are on a horizontal line, the upper with the lower. After the bite is opened I would consider that all remaining natural teeth, which are not on the same horizontal line already established, a detriment to the full benefit to be obtained and would extract them.

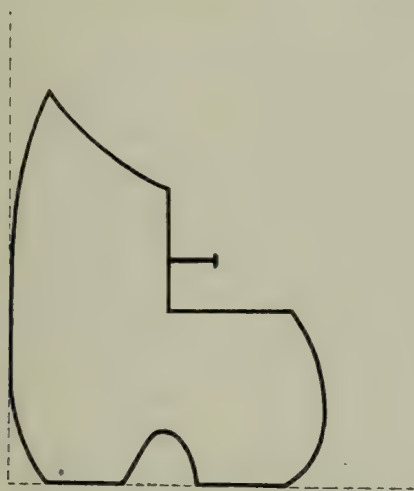
When the posterior teeth are moved out of position, even though a portion of one tooth should be on line, I would extract this to

restore masticating surface; and also to allow dentures to go into place with the least possible manipulation. I consider the cutting of plates to overcome the difficulty of putting them in place a sacrifice of rigidity.

All you cut away in such cases prevents that rigidity which you hope to obtain by holding on to the teeth which are so far removed from the original position.

Dr. Bonwill says "That it should need no argument to convince you that an artificial denture should correspond to the natural one in every respect; as nearly as can be approached."

In my opinion an artificial denture should *not* correspond to the natural one except in its appearance. The artificial teeth of to-day,

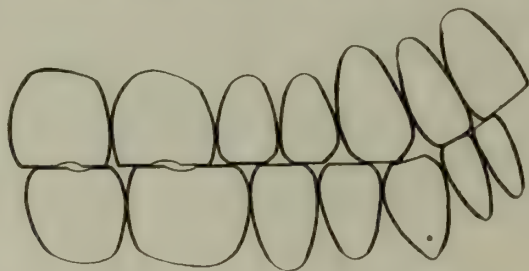


Section of Tooth Ground on Cusps.

if arranged as intended by the manufacturer, would present a grinding surface so irregular that, while undergoing motions of mastication, the contact with the lower teeth would be reduced to a few high cusps, and the plates would be thrown from their position by the overlapping of the incisor teeth. To get the benefit of the full masticating surface one would be obliged to chew by simply opening and closing the jaw, in the same manner as a hinge opens and shuts. Artificial teeth are made to-day as they were years ago; notwithstanding the fact that Dr. Bonwill first mentioned his theory in 1858. The grinding surface of the teeth made after Dr. Bonwill's method is too irregular and too smooth for mastication. The grinding surface of the natural teeth is irregular and rough. The grinding surface of teeth made after this method is flat and rough; just as anything controlled as a mass should be for grinding or masticating purposes.

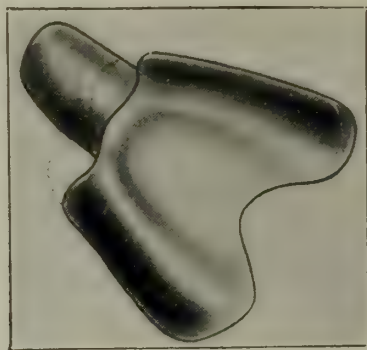
If making the teeth flat necessitates the changing of the condyloid process, nature will adjust herself very readily, as seen by her endeavor to turn incisor teeth into surface grinding teeth by abrasion.

This method of occlusion does not necessitate as careful a selection of teeth as former methods, yet the best results are obtainable only by the use of appropriate teeth. I suggest deep sulci to make a rough grinding surface and teeth with a long bite; they are more



Articulation according to Dr. Pettit.

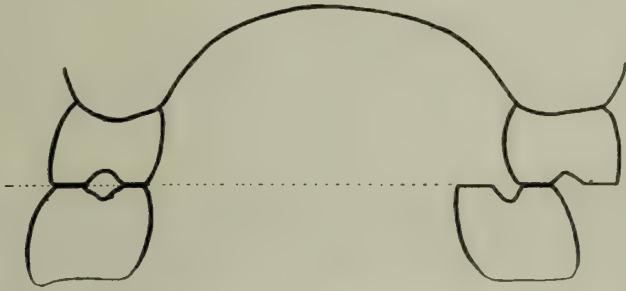
agreeable to the tongue. The posterior teeth should be so shaped that the masticating surface is on a right angle with the buccal surface. I think the great majority of cases require that all teeth should be built on this plan. The idea that the buccal surface of the lower teeth must slant in to properly occlude with the upper artificial teeth is erroneous. When taking impressions of the upper jaw, avoid using an impression cup with too high a rim, as it bulges the lip



Impression Cup cut away.

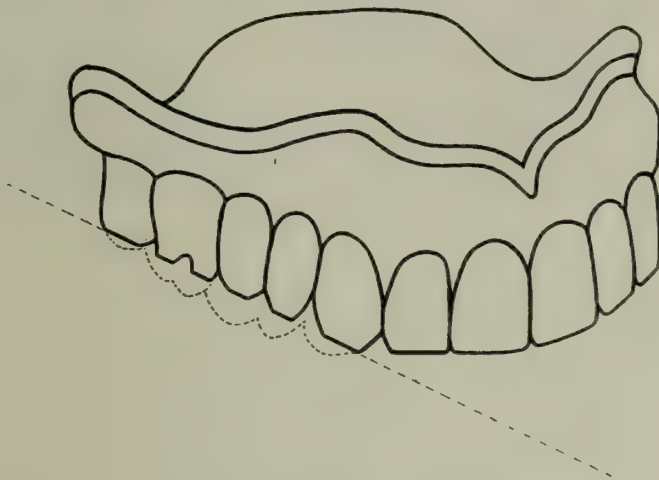
and cheeks and stretches the membrane from the bone. To avoid this I cut away two-thirds of the rim in front, and, after putting the plaster in the mouth, depress the lip all around with the finger, so the plaster will be pressed close to the ridge. This will give a much tighter-fitting plate, one that will better exclude the air. I would like now to call your attention to an extreme but by no means an exceptional case. I have never seen a case where the patient had lost so few teeth, and at the same time had so little use of those

remaining. Notwithstanding the fact that there are many molars and bicuspid left in the mouth, the lower incisors are touching the upper gum, and have even gone above the gingival line. This has not been done, however, without considerable damage to the mouth, for it has spread the upper incisor teeth by acting on an incline plane. There has been so much pressure brought to bear on the few remain-



Cross Section, Showing Movement over Ground Cusps.

ing antagonizing teeth that it has shortened them by absorption of the bone and process, notwithstanding the incisor teeth are very strong, which is proven by the centrals not separating more than an eighth of an inch, the difference being gained by pushing the lower incisor teeth inside of the arch, and possibly some change in the nor-



Upper Set—Cusps Ground.

mal relation of the condyloid process with the glenoid cavity. The patient is under the doctor's care suffering with complicated disorders.

We must meet these difficulties and restore the mouth to a condition which will enable the patient to properly masticate his food. It is plain to be seen that we must open the bite; but how much? To that point where the lower incisor teeth can best reach the upper incisor teeth for cutting. This point establishes the line. (Under-

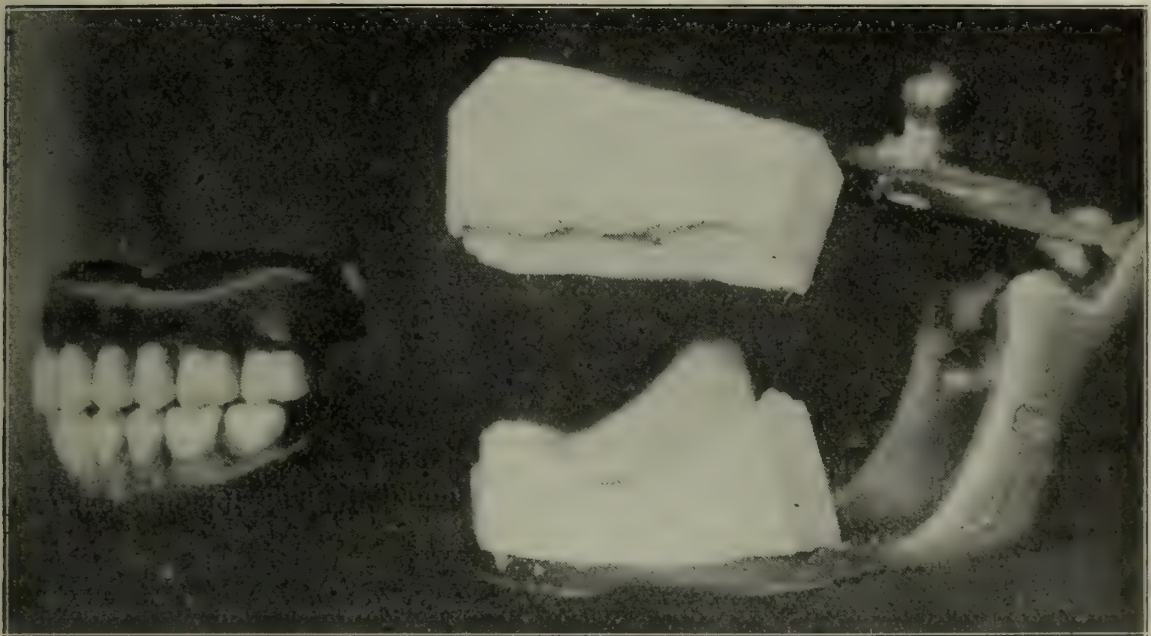
stand where the incisor teeth are left remaining we can have no overlap.) But in this case we also find the right lower and upper molar antagonize which prevents the lower incisor teeth reaching the upper. This necessitates the grinding off or the extraction of the upper or lower molar before the line can be established. This brings us to the point where we are obliged to decide whether the case requires bridge work or plates; if bridge work, the lower molar must be devitalized and ground down to use as an abutment; but we will suppose the patient does not wish bridge work. Then the question is, Which teeth shall we extract, if any? Since opening the bite is imperative, there are one or two upper teeth on the left side which will not touch the lower teeth. As we have decided not to use bridge work, we cannot lengthen these teeth to



Extract Molar.

antagonize by that means; which shall we extract? This is a subject I would like to discuss more at length with any present who may feel an interest in this particular case. I would, however, under such conditions, without reference to this particular case, extract all the natural teeth which would be a detriment to the usefulness of the plates. All that would interfere with the rigidity of the plates, and all that would lessen the masticating surface. So certain am I that this is the right method, I firmly believe that, were I to have all my teeth extracted, and were to allow sufficient time for absorption to take place, then, were to construct plates, using the natural teeth in as near the same relation to the jaws as possible—the plates so constructed would not give me as much satisfaction as if they were made with flat and rough masticating surfaces as above advocated.

When a patient comes to me for artificial teeth, I first prepare the mouth by extracting all teeth that I consider will be a detriment to the usefulness of the dentures. That will include all teeth that have grown too long through lack of antagonists or from other causes, all teeth that we find overlap the line mentioned, or that do not reach it. By the line, I mean a line drawn from the cutting edge of the incisor teeth straight back. Also extract all teeth that lean over, which leave only the posterior cusps on the line. Then I thoroughly clean all remaining teeth. I advocate only plaster impressions, and smooth rigid impression cups that cannot be bent; such



as German silver or the old-fashioned porcelain tray. In every partial case, I always remove the cup from the impression, and therefore regard any roughness of cup, wax, compound, or anything that will interfere with its easy removal as a hindrance. Use a quantity of plaster to fill up the irregular spaces between cup and mouth; and do not depend upon bending, filling in with wax, or any material to approximate the general outline of the mouth. Such methods are not only unnecessary but bungling.

After the cup is removed, and the plaster is quite hard, break the impression out in pieces; and do not hope to remove an inch of plaster through a seven-eighth's space. After all pieces are removed, I take each piece and allow the force of water from spigot to wash away any crumbs which would interfere with the replacement of sharp fractures. In putting impressions together always use the

cup, as it gives relative positions. I always take the bite at the same sitting. I use the mush bite exclusively. It only takes a few minutes, and the casts and base plates are not necessary for its use. I advocate the mush bite for the following reasons:

In the first place it is the most accurate; there is no slipping of the base plates on the mucous membrane. The patient does not have in mind the bringing together correctly the wax covered upper and lower jaw, but on the other hand is told simply to mash the wax. The patient's mind is then on using a certain amount of force, and whether they mash the wax little or much, in the great majority of cases you have an accurate relation between the upper and lower ridge. It also saves time for both patient and operator. The fullness at the time of taking the bite does not have to be considered. I contend that after the length is established, and the models outlined, the position of the teeth will always be in a certain relation to those outlines. All fullness necessary for expression will depend upon thickness of wax from the neck of tooth to outline of plate, and can best be determined after the teeth are waxed in place. In other words, the position of the teeth is the same whether the rim of the plate is thick or thin. I have the patient mash the wax slowly, then tell them to stop, but don't open. Then I see if the lips will come together when muscles are relaxed. If necessary, have them mash further until the lips just meet. Next mark division line of lips, which answers for length of both upper and lower teeth, also mark center line. I use silicate of soda very much diluted as a separating medium; and never use any shellac or varnish. They are not twice in the same condition and only fill up the interstices. The alcohol preparations are also expensive. I think every one who uses silicate of soda enough to become familiar with it will discontinue the use of all other preparations for this purpose. One great advantage of its use is that you are enabled to pour the impression immediately after taking it from the mouth; the impression being wet when it is poured gives more accurate results. In making artificial dentures success lies largely in attention to detail. It is the little things that make a success or a failure. Don't mar the casts. Don't allow sticky wax to come in contact with the casts, as its removal takes some of the plaster with it. Don't rub the cusps of plaster teeth that you are fitting as antagonists, and thereby give yourself unnecessary grinding after the plate is finished. After the models and mush bite are placed together, they are ready to put on

any kind of an articulator. The more simple the articulator the better. I then measure the distance from the top of articulator to division line of the lips marked on the wax bite. This establishes the length of both upper and lower teeth. I commence with the central after having all cusps so ground, that when laid on a flat surface they will touch.

ART IN DENTISTRY.*

BY R. C. BROPHY, M. D., D. D. S., CHICAGO.

Art is divided into two classes, fine or liberal, and industrial or mechanic. Fine art is imaginative creation, the work of the mind inspired and executed purely to gratify some of the pleasurable susceptibilities of men, while industrial art is work of the hands having as a prime incentive supplying the essential demands of life.

Production of the poem or the musical composition, higher examples of fine art, demands no talent in industrial art, while production of the crop of wheat upon the farm, or construction of the locomotive or steamship from the designer's drawings and engravings, aside from their embellishment, calls forth no talent in fine art.

The architect conceives the outlines and plan of a palace, true perhaps to a most exalted ideal of symmetry and beauty, and transmits it to paper with minutest detail, yet if he be not a practical builder undesirable results would be likely to attend his superintendency of its construction. As a fine artist he may be a signal success, while as an industrial artist he may be a failure.

The machinist may possess sufficient skill to construct the most intricate machine, yet he may be entirely lacking in ability to make an intelligible sketch of it when completed. As an industrial artist he may manifest great expertness, but fine, artistic talent is beyond him.

Perhaps in no calling are the two classes of art so interwoven, so intricately connected as in dentistry, and in no calling is there more essential demand for genius and skill comprehending both of them. Not only must the dentist possess that fine, artistic talent which makes him capable of properly determining the procedure indicated in the varied field of his labors from the professional standpoint of preservation of nature's dental endowments, and imitation of nature in their substitution when lost, but he must be capable of doing with his own hands that which his judgment has planned and

*Read before Minnesota State Dental Association.

designed. Hand in hand the two happy proclivities must accompany his every professional step, else he will fail of higher ideal attainments in practice.

The dental practitioner is called upon for professional service, he examines the case and advises a certain procedure; in determining properly the procedure indicated, fine art in its highest conception may be brought into play; in fact, in a very large percentage of cases an extreme fine, artistic skill is absolutely necessary to the production of ideally successful results; while to properly execute the work his fine, artistic talent has laid out for his accomplishment, and which he personally must perform, manipulative skill of the hands, industrial art of the highest order is imperative.

The question as to the relative importance in the practice of dentistry, of excellence in the two classes of art, is one to which is due our consideration. Unquestionably they should be perfectly blended and counterbalanced, but while our efforts should tend in that direction, unfortunately we are not always overburdened with anxiety to perfectly approximate in our creations "the good and the beautiful," or to express it better we are not always given to effort to combine in our work maximum excellence in artificially restoring dental losses true to our ideals of esthetics and usefulness; too often in our zeal to subserve one, we quite overlook the other. We sometimes sacrifice natural appearance for the sake of utility, and on the other hand sometimes neglect considerations of strength and durability to further the esthetic.

It seems to me that either action is wrong. I believe that our ideal effort should be to strike as nearly as possible an equilibrium between the two.

From a standpoint of fine art it is demanded of us that we correct impairment of nature's dental, or oral creation without disclosing our interference, thereby conserving the interest of our clientele in the matter of personal appearance, while from a standpoint of industrial art it is demanded of us that we conserve their physical interests by restoring the functional serviceability of the teeth. Duty to humanity demands that we observe both of these requirements, and we have no right to disregard or ignore either of them.

Fine art is subdivided into two classes, effusive exemplified in music and the dance, and imitative. The latter only should enter into our work as dentists, it being purely imitative of nature's work. We should not of course reproduce unsightly irregularities in prosthesis,

but it is hardly justice to nature, I think, to regard irregularities as nature's work. Nature does not install teeth irregularly unless there is some sort of mechanical interference with her processes, and it is for the individual, or more properly speaking, the parents of the child, with the aid of the dentist, to guard nature against such interference. At any rate the matter of correcting irregularities is not for the prosthetist to consider but to a limited extent. Of course we should do what we can in the way of improving personal appearance when effected detrimentally by abnormal position of the teeth, but as prosthetists our license to try to improve upon nature's handiwork is a very restricted one. This is the field of the orthodontist.

We are given to regard fine art as essentially comprehending the beautiful, but in so far as it applies to our work as dentists, at least, this does not necessarily follow, unless, as so infrequently happens, we are called upon to reproduce teeth lost from a really beautiful set of teeth, or restore the contour of really beautiful features impaired through dental losses. In the literal acceptance of the word, we must not be dominated by a desire to effect the beautiful in our creations. The generally prevailing idea is that teeth to be beautiful must be small and white, but if we do, as we are often importuned to do, install small white teeth in the mouth of a person who by every rule of scientific reasoning based upon consideration of temperament, complexion, physique, etc., demand large colored teeth, our accomplishment is entitled to the reverse of credit for being beautiful. The teeth may be beautiful, our work industrially may be beautifully done, yet as a result of nonconformity to nature's specifications our creation is deplorably deficient in manifestation of fine, artistic, or esthetic taste. We are requested to place an all-gold crown upon an anterior tooth, or root. If the perverted taste of the patient were humored, if we were to construct a crown so perfect in every line as to fully entitle it to regard as a fine, artistic creation and in so far as industrial or mechanical skill is concerned, if properly constructed it certainly might be so regarded, could we claim credit as fine artistic dentists for performing the operation?

The dentist's interpretation of the word beautiful differs from the commonplace interpretation of the word; to him beautiful means, or should mean, imitation of nature's handiwork so closely as to disguise the artificial. When a dentist has accomplished this he should feel that he has conserved fine art in the highest sense; he should credit himself with having accomplished a beautiful result, no matter

whether others who look upon it regard it as beautiful or otherwise.

Dentistry as a profession in some particulars is deplorably indifferent to conservation of fine, artistic effects; of this fact the use of pink rubber in pretending to imitate the natural gums is a notable example. In about everything else we do in dentistry we are enabled, if we have proper judgment, and sufficient skill, to effect perfect results; but in endeavoring to imitate the natural gums by the use of pink rubber success is positively impossible. A disparity exists in color and shading between pink rubber and nature's gums, which makes the use of the former in endeavoring to imitate nature, and as a disguise of the artificial, a veritable farce.

Many years have passed since our profession committed itself to this most inartistic practice, and it has now become so thoroughly fixed in it that a spirit of perfect resignation and apparent contentment pervades it. At least so it would appear, for not a voice is raised in protest or even criticism of its use.

In gum section teeth we have presented to us a possibility of attaining far more desirable results in imitating nature's gums, but unless we succeed in so grinding the lines of union of the blocks, and so nicely gauging our pressure in flasking for the vulcanizer, as to make them non-noticeable in the mouth, from an artistic point of view, we gain nothing from their use; for equally manifest as is the case when pink rubber is used, is the lamentable fact that the work of nature has been substituted by the work of man.

It is true that perfect work in making use of gum section teeth demands time and skill, but when we know that subservance of esthetic effects demands that they be used, in justice to our patient, ourselves, or our profession have we a right to plead such excuse for not using them?

It may be of interest in this connection as showing the general disinterestedness manifest in our profession in the matter of making use of that which, through a little more exertion in the matter of labor, and the possession of a little necessary skill admits of more artistic results in imitating the gums, to know that in the whole number of full sets of teeth manufactured only about ten per cent are gum section teeth, and I am informed by one of the largest manufacturing concerns that the demand for them is constantly diminishing.

From an esthetic standpoint the most gratifying results found in our present day practice are born of the efforts to further the use

of ceramic or porcelain work. In this work we must recognize a most potent factor in developing that delicate manipulative skill, possession of which makes the true industrial artist; indeed the dentist who takes up this work and succeeds in mastering manipulation of it, not only comprehends a very high ideal of industrial art, but he is enabled to produce results which as a creation may fittingly be regarded as within the realm of fine art.

In operative as well as prosthetic dentistry must we appreciate the advantage of the use of porcelain work. Dr. Norman W. Kingsley has said "Gold fillings in teeth are unsightly and savor only of barbaric splendor," the use not only of gold crown within the range of vision in the mouth should be condemned, but equally objectionable from a strict esthetic standpoint is the use of gold, or any other material for filling purposes which contrasts sufficiently with the natural tooth structure as to be conspicuous or even observable. As porcelain enamel approximates very nearly in appearance the normal mucous membrane of the mouth, so porcelain body in the form of inlays may be made to imitate the natural tooth structure; and therefore in the rapidly expanding practice of substituting porcelain inlays for the other kinds of fillings in the anterior teeth we are merging into a practice which embodies the greatest advance in esthetic dentistry since the introduction of porcelain teeth.

In crown and bridge work, porcelain opens up to our profession a means of completely abolishing presentation of metal in the mouth, and for perfect duplication of the appearance of nature's creations. In plate work instead of making use of the universal signboard of dentistry, pink rubber, we may construct dentures which present no appearance of being artificial. It is regrettable that the expensiveness of platinum precludes the general use of continuous gum plates, for in them is comprehended the highest standard of perfection yet developed in plate work, not only from a standpoint of both industrial and fine art, but from a physiological standpoint.

As dentists let us always keep in mind the artistic and try to subserve it both mechanically and esthetically in every operation which we undertake. If we do this the standard of our profession will rise as does the morning sun until recognition shall be accorded it as encompassing higher accomplishments in art, in addition to higher accomplishments in science; and the last lingering liking of the dentist to the craftsman will lift for lack of substantiatory evidence.

PRESIDENT'S ADDRESS.*

BY DR. W. C. BUNKER, OREGON, ILL.

Gentlemen of the Northern Illinois Dental Society:

Without going into history I will say that I was present at the organization of this society at Rochelle, in December, 1886, and it is with very agreeable feelings that I notice that the present list of membership contains the names of nearly all of those who were present at that organization.

Of the twenty-two charter members only seven are not now on the list.

This surely indicates appreciation of the good work you have done and are doing. A glance at the program will surely corroborate this statement, and it testifies to the zeal and efforts of your executive committee.

The statement was made by your president last year at Aurora that of the five district dental societies in this State ours was the only one still in existence. I am sure he was glad to be corrected by the chairman of the executive committee of the First District Dental Society, who recently informed us that they are still in active work. We congratulate them.

It affords feelings of great satisfaction and relief to note the good work being done in hunting down the illegal traffic in dental diplomas, which has made the name of the State of Illinois a by-word in Europe, and has caused its diplomas to be of doubtful value and brought the blush of shame to the cheek of every honest dentist within her borders. May the good work go on and those engaged in it have the countenance and assurances of good will and support of us all until the time shall speedily come when a man possessing a dental degree granted in this State will be known and recognized as a man who has given undoubted proof of his skill and whose professional attainments will be rated just a little higher than those from any other State.

Our thanks are due Consul Worman for his efforts to hunt down the guilty parties and uphold the good name of our dental institutions of Illinois.

And while on the subject of reforms I would like to see some law whereby an individual can be punished who will deliberately sit down and have dental work done and then say they "have no money

*Read before the Northern Illinois Dental Society.

to-day, but will pay in a few days." I mean persons who are execution proof. What is our remedy? We simply cannot demand pay in advance, as we are often unable to tell beforehand what the expense will be. If we are obliged to make donations of time and material we at least ought to have the right to say to whom they shall be given. There is food for thought here. I do not believe the city dentists are troubled to the extent that we of the smaller towns are.

I have been trying to practice the principles laid down by Dr. Cormany at Aurora last year, and thought for a while I had succeeded, as he promised to give me "absent treatment" and I really believed I was doing well under it—had inside of the first three months a hundred dollar bridge to make—the power was working fully, but I saw not long ago that a "fraud order" had been issued against the "high priestess" of the cult, and then wondered how far their wireless telegraphy would work.

A practical point and I am done: I have found a great saving of gold in finishing fillings by smearing lightly the finishing strip with what is given in the books as a lip salve and composed as follows:

Red oxide of mercury.....	grs. lxij.
Yellow wax	drachm ij.
Oil sweet almonds.....	drachm vj.

It far surpasses vaseline or oil, and undoubtedly the wax in it accounts for the improvement.

LESIONS PECULIAR TO PRIMARY DENTITION.*

BY CHARLES E. BENTLEY, D. D. S., CHICAGO, ILL.

The line of service which marks the place where the dentist leaves off and the physician begins has, in this day of extended dental education been so far advanced that it is needless for me to apologize before this gathering for presenting a paper that has an interest for the dentist and physician alike.

As dental education advances the needs of the dentist are more and more in demand in territories heretofore unheard of, and it is along this particular line that dentists are being consulted with reference to some lesions that are peculiar to primary dentition.

*Read before the Northern Illinois Dental Society.

Dentists who are teaching oral surgery and oral pathology in medical schools are largely responsible for this innovation, I believe, and in proportion as we increase our knowledge in this direction we win the respect of our medical confrères as to our worthiness as specialists in the truest sense, as well as their confidence and esteem.

The knowledge regarding the lesions peculiar to primary dentition is becoming exact. The days when the family physician used the phenomena of primary dentition as a cloak to hide a blighting ignorance are rapidly passing away. Most any disease of infants which baffled the unskilled and untutored man of medicine in days past was attributed to "teething," but in the dawning of specialties and their subsequent elaboration, the lesions of first dentition were clearly defined and classified. Dentistry has contributed much to this condition of affairs.

Primary dentition is a physiological process, but like another physiological process—utero-gestation—is one of continuous irritation. Irritation then is the one thing with which we have to contend, and to constantly remember in the management and consideration of the lesions it induces. This irritation occurring in a healthy infant with the normal eruption of the teeth will not, in a great majority of cases, occasion any disturbance worthy of scientific notice. When in an unhealthy child, and the eruption abnormal, lesions more or less grave do occur and with these we shall concern ourselves.

To understand dental irritation presupposes a knowledge of dental evolution. Without the knowledge of the time and character of an erupting tooth, one is as helpless as a ship at sea without its rudder. We also must understand that there are some diseases that retard or accelerate dentition; that many teeth may be in process of eruption at the same time, thereby intensifying the irritation and producing reflex phenomena, all of which can be modified by an intelligent use of the lancet and a thorough knowledge of dental evolution.

The various works on children's diseases make as many classifications incident to first dentition. The following, however, seems to be the most generally accepted and rational:

1. Localized Stomatitis.
2. Irritative Fever.
3. Diarrhea.
4. Spasms.

1. *Localized Stomatitis.* The first symptom of this condition is

an itching of the parts affected. The child will make this manifest by rubbing its gums upon any hard substance it may carry to its mouth. An excess of saliva will flow as a reflex of this stage of irritation. Inflammation of the gums will soon follow this condition and will extend or be circumscribed in accordance with the constitutional condition of the child and the number of teeth erupting. As for example: If several teeth are erupting on opposite sides of the oral cavity, the inflammation is liable to become diffused—but if there is but a single tooth coming and the child is not of an inflammatory cachexia the tumefaction will be circumscribed. Several constitutional conditions are responsible for diffused inflammations in the oral cavity in dental evolution, namely: Tuberculosis, syphilis, rachitis and cretinism. These conditions may also induce retarded or accelerated dental evolution and most always are accompanied with aggravated inflammatory conditions of the oral cavity.

Syphilitic children are prone to early dentition and early decay of the teeth. Nursing children erupt their teeth earlier than those artificially fed. Rickets delay dentition more than any other cause, save cretinism. The delay in dentition in rickets may be from eight to twenty months, while of cretinism, teeth may not appear years after the time of their normal eruption.

The appearance of the gum over an imprisoned tooth is largely indicative of the physical condition of the child and always denotes the use, or nonuse, of the lancet. The part over a tooth indicates lancing, when it has a glistening, tense and inflamed look. Such a gum is "ripe" for lancing, and in case of any of the six anterior teeth a single incision across the incisal edge of the tooth, or teeth, is sufficient. In case it be the molars, a crucial incision is necessary.

In an unhealthy child, the gums present a flaccid, relaxed and soft-looking appearance and all parts look as if any additional irritation would result in a breaking down of the parts. Lancing in such a child's mouth becomes a serious problem.

1. Because the control of the hemorrhage would be a serious matter. 2d. The inflammation already induced by the unerupted tooth, or teeth, would become intensified, which might produce a more complicated condition than the simple localized stomatitis present. In this condition described, constitutional, rather than local treatment is indicated. This constitutional treatment, it is needless for me to say, is largely dependent upon the character of the disease with which the child is suffering and truly belongs to the phy-

sician's realm, or more properly speaking, to-day, to the specialist in children's diseases. Diatetics, hygiene and sanitation are, however, the potent agents to-day in the treatment of such diseases, instead of drugs.

2. *Irritative Fever.* The characteristic difference between irritative fever and inflammatory fever is that one appears and disappears quickly, the other has a rhythmic rise and fall. The lancing of an inflamed gum, under which is an imprisoned tooth in an infant, in the majority of cases, causes a subsidence of the ill effects of irritative fever, while inflammatory fever has a logical course and ending.

The symptoms of this malady are muscular excitability, thirst, rapid pulse, rise in temperature, convulsions and sometimes death.

When, by exclusion, irritative fever is pronounced to be the cause of the above symptoms, and lancing is indicated, the supplemental treatment is important. Many drugs are recommended and much literature is written for its control. But there is one effective remedy found in *hydrotherapy* that should be placed above all others. The *cold bath* does allay the grave symptoms of this disease and in the writer's opinion should be used to the exclusion of drugs. The rationale of the cold bath is not so much to reduce the temperature, as it surely does, as to stimulate the nerve centers to greater activity, thereby aiding the pores, glands and secretory organs in their power of elimination of poisonous products.

3. *Diarrhea.* The alimentary tract from mouth to anus is covered with mucous membrane. Hence, it is not difficult to see that a localized stomatitis, by reason of its continuity, may extend to any part of the tract. It is in such cases that diarrhea may be induced. The vascular perversion consequent upon an inflamed mucous membrane primarily induced by the irritation caused by imprisoned teeth can, and does, produce diarrhea in children.

Diarrhea in children may arise from many causes, not needed to be considered here. All diarrhea in children is not caused from an erupted tooth. But upon examination we find the mouth inflamed and extending to the fauces and as far as the eye can detect we can safely conclude that such diarrhea is caused by irritation incident to dentition. The lancet here is, as in all these cases, the one remedy to apply. If internal medication is indicated the physician should administer such treatment.

4. *Spasms.* A spasm is an irritation, direct or indirect, of the terminal branches of the spinal cord. That an unerupted tooth in a

child may cause a spasm is without doubt true. Dr. Nathaniel Field reported a case in the *Medical Record* where a child had suffered from repeated spasms for over a period of two weeks. It was examined from head to foot for the cause. Consultants were called in and their skill and experience were baffled in their attempts to discover their origin. The spasms increased with alarming frequency until they had begun to despair. At the beginning of one of the spasms one doctor noticed a twitching of the muscles of one side of the face and lifting the lip found an imprisoned cuspid and ordered its extraction. Upon the extraction of the tooth referred to the spasms ceased and no reoccurrence of the trouble ensued.

In the intelligent use of the lancet a word might be said. When it is determined that the lancet should be used it should be thoroughly sterilized before so doing. Infection from an unclean lancet has occurred in the lancing of the gums. Too much stress cannot be placed upon this phase of the subject. In the control of hemorrhage, which is often a troublesome factor, the method open to the least objection is the use of hot water. Styptics and coagulants do have their place, but with the exception of adrenatin, which is a compound of suprarenal capsule, hot water is at once the most effective remedy.

In conclusion my only word is a plea for the more close observance of these cases of the little folk that we may familiarize ourselves with their sequelæ and extend our field of usefulness.

TREATMENT OF THE PULP.*

BY A. H. PECK, M. D., D. D. S., CHICAGO, ILL.

First let us consider those cases in which it seems necessary to devitalize, and in a general way I may state the following instances: In most cases where the roots of teeth are to support bridges, or are to be crowned, the pulps should be devitalized, even though the teeth may be sound, or nearly so, and briefly, for these reasons: It is always necessary to do so much cutting to properly shape the natural crowns for the artificial ones, that it is impossible, in the majority of cases, to do so without causing intense pain to the patient; another reason is, that often in so shaping the natural crowns, some horn of the pulp is nearly exposed and thus subjected to the irritating effects of the cement and to those of thermal

*Read before the Northern Illinois Dental Society.

changes, thus giving rise to a slow form of irritation, which continues and becomes greater, until finally inflammation sets in and the pulp dies. Another reason, and one which, in my judgment, cannot be overlooked, is the fact that nearly all cements, the phosphates, contain more or less arsenic. This has been proven conclusively, although some claim that the amount of arsenic contained in the powder is so small that it cannot cause trouble, but I have seen numerous cases where I am satisfied that trouble has resulted from this source. It is my judgment that in setting crowns with oxyphosphate of zinc, where the teeth are extensively cut, there is danger of causing devitalization. But the chief reason for devitalizing is the one first mentioned.

A second class of cases in which it is nearly always necessary to devitalize previous to filling or other operations is those in which the pulps have been exposed to the irritating effects of saliva, micro-organisms and other substances in the mouth by the process of caries. There is not one such case in a thousand, in my judgment, that will survive long under a capping.

Another class of cases is those in which pulps are accidentally exposed as a result of careless manipulation of burs, and occasionally hand instruments, the pulp tissue being punctured or lacerated to a considerable extent so that more or less hemorrhage occurs. It does **not matter** what the condition of the patient, whether young and **healthy, or aged and infirm**, in the great majority of cases the pulps will die under capping.

A fourth class is those in which pulp nodules have formed. This is one of the most difficult pathological conditions to diagnose with which we have anything to do.

It may be stated in a general way that the chances for saving pulps in the teeth of persons living in malarial districts, other things being equal, are much less than in more healthy localities. If there is any doubt as to whether it is best to try to save pulps for such individuals the safer procedure is to devitalize.

Condition of Pulps for Devitalization. When it is necessary to sacrifice a pulp, a very important question is, in what condition should the pulp be before proceeding to devitalize, by whatever means? Let it be understood that the rubber dam should be in place before proceeding with the various treatment processes. If a pulp is inflamed it is not in a good condition for devitalizing. It should be placed in as nearly a normal state as possible. Why is this necessary?

Why is it not as well to apply paste or other means of devitalizing when the pulp is inflamed, as it is when it is in a healthy condition? It is a fact that inflamed tissue, in whatever portion of the body, resists the action of medicinal agents. If the tissue is inflamed the blood vessels are engorged with blood, the surrounding connective tissue is invaded by the products of inflammation; that tissue will stubbornly resist the absorption of medicinal agents. In the treatment of inflamed pulps, which latter are confined within the bony walls of a pulp-chamber, thus rendering expansion of the tissue impossible, there is necessity for more care than in the treatment of inflamed tissue in any other portion of the system. If paste or other means for devitalizing is applied to an inflamed pulp the action of that pulp is to resist the absorption of the agent and the result is a further disturbance of the organ, which causes greater pain to the patient.

PALLIATIVE TREATMENT.

Palliative treatment should be resorted to in cases of inflamed pulp, in the majority of instances, before attempting to devitalize. What may we use to reduce the inflammation of a pulp?

By way of medicinal agents the following are as useful, perhaps, as any: Oil of cloves, applied warm; oil of cloves and carbolic acid, 95 per cent, or the crystals melted, equal parts; oil of cloves and sulphate of morphia, mixed to a thin paste; sulphate of morphia and hydrochlorate of cocain, equal parts, thoroughly mixed, oil of cloves added in sufficient quantity to form a thin paste; wine of opium, applied warm, is excellent, and in some instances pure beechwood creosote is good.

Where palliative treatment is to be used, the decayed dentin and debris in general should be removed as thoroughly as possible. The pulp should be exposed, or as nearly so as may be, so that the agent will have free access to the inflamed tissue. Then agents should be applied with absorbent cotton, or other similar means, in a way to avoid pressure on the pulp. Seal tightly, either with gutta-percha stopping or cement, and leave for a day, two days or three, as the case may be. It will occasionally be necessary to repeat the application before the inflammation will materially subside. The most positive way to reduce the congested condition of a pulp is to lacerate the tissue and let the excess of blood escape. Sometimes this can be successfully done, and with little inconvenience to the patient.

There are a number of different methods for devitalizing pulps advocated and practiced at the present time. Arsenic, which for years has been the principal agent used, is now largely replaced, by many operators, with other means. The dangers attending the use of arsenic and the extreme care necessary to avoid poisoning adjacent tissue have ever caused the profession to be anxious to welcome any efficient means unattended with such dangers. This is evidenced by the favor accorded various methods that have been presented from time to time.

A method now largely in use is that of cocain in solution under pressure. To successfully use this method the pulp should be exposed and in as nearly a normal condition as possible. I have found an aqueous solution of the drug to be as satisfactory as any. Some advocate the use of cocain dissolved in alcohol, and various other medicament added, but in my practice I have failed to observe any special benefit from any of these. A pellet of cotton is saturated with the agent and passed into the cavity; then a piece of vulcanite rubber large enough to a little more than fill the cavity is placed over the cotton. Firm pressure should then be applied by means of an instrument, which is nearly as large as the cavity itself. Care should be taken that this pressure is applied directly over the pulp, and it is necessary that it be carefully applied at first, so as to avoid unnecessary pain to the patient. As soon as the patient does not manifest pain from the pressure, the pulp, in a majority of cases, can be removed without inconvenience. I have found this means quite useful in destroying the sensitiveness remaining in portions of the pulp approaching the apices of the roots. Frequently in attempting to devitalize, especially with other means, a portion of the pulp at the end of the root remains, and not infrequently develops severe sensitiveness, which is difficult to control. The use of arsenic is undesirable, because of the close proximity of the tissue to the foraminal opening.

The use of arsenic for devitalizing purposes is, and has been, the standard means employed by the profession for years. Arsenious acid, white arsenic, with a chemical symbol of As_2O_3 , is the form used. This drug is best used in combination with other medicinal agents to form a paste. The following formula is, in my judgment, as good as any:

Arsenious acid grs. xx.
Hydrochlorate cocain crystals grs. v.
Sulphate of morphia grs. v.
Oil of cloves m. iij.
Glycerine sufficient to make a stiff paste.

The addition of five per cent of lampblack will be found an advantage (Dr. Black). It colors the paste and makes it easier to detect any particle that may have gotten outside the cavity on the tooth or the rubber dam. The lampblack does not in any way interfere with the efficacy of the paste.

Previous to the application of arsenical paste it is necessary that all decayed dentine and other debris that may be present be thoroughly removed from the cavity. All frail margins of the cavity should be cut away, and whenever possible a positive exposure of the pulp should be effected, so that the paste may be applied directly to the soft tissue. To insure best results, the pulp should be free from inflammation, or as nearly so as possible. A quantity of paste half the size of the head of an ordinary pin is all that is necessary to be used. This should be applied on a small pellet of cotton or a small piece of writing paper, as stated, directly in contact with the pulp. In thus applying the paste, pressure upon the pulp tissue should be avoided.

In devitalizing pulps, especially in bicuspid and molars, where it is difficult to place the temporary stopping without imparting pressure to the pulp, it is well to place immediately over the arsenical application an oval-shaped disc of metal, such as tagger's tin or thin German silver, over which the temporary stopping may be placed without danger of exerting pressure upon the pulp. The cavity should be carefully sealed with oxyphosphate cement or with some variety of gutta-percha stopping. In the hands of an operator who is expert in the use of gutta-percha, it is my judgment that cavities can be more securely sealed with this material than with cement. In the use of whatever material for this purpose, the margins of the cavity must be thoroughly dried, so that the material will adhere to them, thus preventing the ingress of moisture or the egress of the arsenic. After the cavity has been sealed, and before removing the rubber dam, as a precautionary measure to prevent poisoning of the soft tissues in case any of the arsenic has passed outside of the cavity, dialyzed iron should be freely used about the tooth. This agent, in sufficient quantity, renders arsenic inert. Dialyzed iron should thus

be used rather freely, as it requires from four to five volumes of it to destroy the potency of one volume of arsenic.

In dealing with disto-occlusal cavities in bicuspid and molars it is frequently an advantage to build an artificial wall from the cervical portion of the cavity to the occlusal surface of the tooth, previous to the application of the arsenic, as indicated in the use of cataphoresis. This will reduce to a minimum the possibility of any arsenic being forced out of the cavity when placing the temporary stopping.

In teeth of adults, arsenical applications should remain at least forty-eight hours, and in many cases may remain even longer without causing trouble. In the permanent teeth of young people arsenic should not, as a rule, remain more than twenty-four hours.

On removing the arsenical application, if the pulp tissue is not sensitive, it may be removed at once. If the tissue is still sensitive, and in the majority of cases it will be, glycerite of tannin may be sealed in contact with the pulp, and left for five to seven days. This will absorb the moisture and cause the fibers of the tissue to become toughened. The lapse of time permits the remaining sensitiveness to subside so the tissue can be removed without inconvenience to the patient.

A 20 per cent solution of tannic acid in glycerine, with 5 per cent of alcohol added, should be used. The alcohol thins the solution and adds somewhat to its antiseptic value.

Tannic acid is somewhat irritating to soft tissue and in some cases may cause slight apical pericementitis. I believe in the majority of cases this untoward result is not manifested to an extent as to render the use of this agent undesirable. In some cases, instead of using glycerite of tannin, I have used a mild, nonirritating antiseptic, pending the subsidence of the sensitiveness, with very good results.

After the pulp has been removed, the pulp chamber and cavity thoroughly cleansed with peroxid of hydrogen, whether it be at the first sitting or a subsequent one, a mild, nonirritating antiseptic should be placed in the root-canal by means of a thread of cotton. This should remain for five to seven days, as the case may seem to require, previous to filling. It is not well, as a general rule, to resort to immediate root-canal filling. Devitalization and removal of pulps, even under the most favorable conditions, leaves the tissues involved at the end of the root in a wounded condition. Sufficient time should elapse between the removal of pulps and the insertion of root-canal

fillings for the lacerated tissues to heal thoroughly. If this is not done, apical pericementitis is likely to follow as a result of irritation of the wounded tissues by the pressure of the filling material.

Treatment should not be left in root-canals too long a time. Over-treatment is as undesirable as insufficient treatment.

If, for any reason, the medicines are left too long a time, trouble frequently follows. The agents are slowly, gradually, continually absorbed by the soft tissues, which latter become more or less impaired. At first the tissue shows signs of irritation; this induces an excessive flow of blood to the part; the blood accumulates and the small veins become affected and are unable to carry the blood away as fast as it comes; it accumulates and becomes venous in character, and after the lapse of weeks, or perhaps months, the cotton is removed and considerable hemorrhage follows. This not infrequently gives rise to some speculation as to the cause of the flow of blood.

I will read a letter which I recently received from a practicing dentist, which will further elucidate this particular point. He says: "I take the liberty of asking for a little information in regard to a troublesome tooth under my care. Some time ago I devitalized the pulp of one of Dr. ———'s teeth, who, by the way, is a dentist himself; first lower molar, using arsenious acid, which was removed in two days. Then I placed tannic acid and glycerine, and let it remain two weeks. At the expiration of that time the pulp was removed without pain or hemorrhage. I cleansed the canals with pyrozone and sealed with oil of cloves. A period of six weeks has elapsed since I saw the patient, but in the meantime it has been treated by another dentist, as I have been away from the office. The last treatments could remain sealed only for a short time, the tooth would become so sore it was necessary to remove them. I used pyrozone. There was no odor, everything looked fine, and I used oil of cloves in the root-canals and sealed, leaving a vent in the temporary filling. In forty-eight hours the tooth became sore, elongated and the face slightly swollen. I removed the temporary filling and the root-canal dressing, and this was followed by a severe hemorrhage. The tooth, of course, felt easier at once. Now, where I am in trouble is, what shall I use for root-canal dressing, and what was the cause of so much blood when I had been particular not to pass the broach through the apex of the root?"

The difficulty in connection with this case is just what I have outlined above. The treatment was in the canals so long that the tissues in the apical space became diseased, became irritated, became

hyperemic, first active, then passive; finally, inflammation set in in a mild form, and caused the tooth to become tender to pressure, resulting in pain, and when the treatment was removed the excess of blood flowed from the apical space and the patient experienced instant relief. It was not the use of the antiseptic that caused the trouble; it was its misuse, by leaving it in too long a time. Of course, there would not be any odor, gas or anything of that nature, because the trouble had not progressed far enough, had not been infected with germs, which is necessary that such conditions may result. The parts involved were aseptic, yet inflammation was present. As soon as the hemorrhage and other abnormal conditions are well under control, the root-canals of such cases should be filled. If infection has not taken place, the conditions of irritation will, as a rule, gradually pass away. An opening should be made through the gums, and the alveolar plate of bone, into the apical space of those cases which continue to cause trouble. The diseased tissues should be thoroughly removed from the apical space, and the case treated aseptically until the parts heal.

Cases Not Affected by Arsenic. There are some cases in which arsenic does not seem to affect the pulps. The latter do not absorb it to any appreciable extent. Even after several applications have been made directly to the soft tissue, a positive exposure being present, the pulp is as sensitive, and if any difference, more so than at first. No doubt, in the majority of such cases, if the truth were known, the individual is a habitual user of the drug or of some other drug of like nature. Tolerance by the system of large quantities of poisons, such as arsenic, morphia and cocain, is established in individuals by beginning with the internal use of small quantities and gradually increasing the amount. In such cases the circulatory medium and the tissues of the body in general are charged with the individual poison. This, in a sense, acts as an antidote to the effects of arsenic as the drug is used for devitalizing purposes. The extent to which these drugs are used internally by many individuals, especially in the large cities, is certainly surprising.

One encounters difficulty in devitalizing pulps of teeth for such individuals, not only with the use of arsenic, but also with any of the ordinary methods for devitalizing. In aggravated cases of this character, there is no objection, in my judgment, to the administration of a systemic anesthetic, such as nitrous oxide gas, and an immediate removal of the pulp. Indeed, in many cases this is the only satisfactory method that can be practiced.

PROCEEDINGS OF SOCIETIES.

EIGHTEENTH ANNUAL MEETING MINNESOTA STATE
DENTAL ASSOCIATION, DULUTH, MINNESOTA,
JULY 30, 31, AUGUST 1, 1901.

DISCUSSION PRESIDENT'S ADDRESS.

W. N. MURRAY: In discussing this most creditable address by our worthy president, I feel that the subjects that he has presented for our consideration are most opportune. We are like children and are very apt to place a big I before us and forget the hardships that our forefathers were subjected to in their struggle for recognition among the learned professions. The prominent position we occupy to-day before the world is mainly due to their efforts. This matter of placing ourselves before the public as one of the foremost and necessary of the learned professions, is not wholly a society matter. It is more a personal one, and as for dignifying our calling and putting our profession upon the highest ethical pinnacle, the dentist can do more in his office at his daily labors than we can through our societies. It is the man that makes the profession, not the profession that makes the man.

In referring to recognition of our calling by the U. S. government, I believe that we have obtained just foothold enough for the government to see in a short time that the dentist is as necessary an adjunct to the health and welfare of our soldiers as is the physician.

I see that our worthy president makes the statement that our advances for recognition must be made along the lines of original research and scientific knowledge. This statement brings up a number of conflicting thoughts. The medical profession, probably one of the most learned and scientific of the learned professions, has more real quackery and imposition to contend with to-day than we have. We are practicing a profession of facts, and there is positively no limit to the amount of skill that can be exercised in each individual case, even when we are required to treat lesions of the mouth, etc. As to the bacteriological aspect of our profession, are not our laboratories connected with our State institutions sufficient for all the investigations that we could ask for if we choose to avail ourselves of them?

When we get into this field of bacteriology, are we not getting

into a theoretically speculative field? It would seem that the late utterances of the renowned Dr. Koch that have so recently stirred the scientific world would lead us to think so. When such men make statements that are in direct opposition to existing views, we cannot help asking ourselves the question, where are we at? Yet after all the conflicting thoughts this subject calls forth, we are brought back to the original thought as expressed by our president, that it was the investigations and researches of our forefathers that have placed us where we are to-day as a profession, and it would ill become me to offer any argument against any scientific investigation that this society might see fit to indulge in. In fact, I think that there is much that needs investigating. We are daily deluged with all kinds of so-called antiseptic mouth washes, and were it not for the idea of cleanliness that these nostrums carry with them, I should feel like calling a halt. Our duty toward the younger members of the profession has always been a subject that has been very dear to me, and I am glad that our president has brought this before you, and I think that it would be wise to instruct our membership committee to invite these young men to become members of this society. I can offer no better argument for the young men than by referring you to our president and executive committee for this year. I believe in young blood.

DR. JAMES M. WALLS: I do not know that I ought to discuss this paper, as I have given no previous thought to the subject. However, there are a great many valuable points brought out in it. The suggestion that is made regarding the recognition of our profession by the government is a very important one. The fact seems to be that we are just now becoming generally recognized as one of the important professions in life. We have to a great extent laid aside the medical work, so far as it relates particularly to dentistry, and have branched out for ourselves. There is a tendency on the part of some to advocate a medical course for the dentist. Such a suggestion seems to me somewhat irrational, for we are not a specialty of medicine; we are entirely separated from it in our method of work and the foundation of our study. I think probably a better means of getting at scientific research would be, as the last speaker suggested, through our institutions of learning. It is a fact that dentists as a rule have not a great deal of means, and to lay aside their practical labors and take up a course of investigation means to them the outlay of a considerable sum of money. It is possible we could get

an appropriation from the State through our State university, and we might also have some one who would receive the products that are placed on the market by manufacturers and tell us of their specific values.

The interest of the young men in the State Dental Society has been in the past somewhat latent, and I think we ought to encourage the solicitation of membership. Each member of the association ought to be a committee of one to solicit members from among the young men who go into the profession. If a young man gets started right the probabilities are that he will continue right through life. There are a good many knocks received during the first two or three years in the dental profession, and one is liable to become discouraged; and with nothing to buoy him up except business ends he may lose sight of the professional or ethical side of the work. The older men usually will take care of themselves, and if we can get the young men started along the proper lines it seems to me we can build up an organization here that will politically be of great advantage to the dentist and the public.

DR. ALFRED OWRE: There is one thing to which I would like to call attention in Dr. Orton's address, and that is in regard to recognition by the medical profession. We are not specialists in medicine, and they do not recognize us as such, but as a separate profession. We have not taken a full medical course and we consequently have no right to lay claim to being specialists in medicine.

I think so much of the idea of a chair of experimental dentistry, as suggested in the address, that I would like to endow such a chair with \$10,000, and I assure you that I will do that as soon as I become wealthy.

As to membership, I heartily approve of any plan or idea looking toward its increase, and I would like to see some action taken by the members in making a concerted effort to secure a larger membership. Dr. Walls said something about starting young men right, and that is a good suggestion, as it is somewhat difficult to get out of one's habits after one becomes old. It is a very good idea to get the young men started right, incidentally a little rejuvenation of the old fellows would do no harm.

DR. F. H. ORTON (closing): In reply to the discussion of my paper I can only say that it could hardly be called a discussion. It has been made up chiefly of kind words, for which you have my thanks.

I am sorry there has not been more enthusiasm shown in the matter of establishing a chair of experimental dentistry. This is the second paper I have written upon the subject and I think there is great need of such a chair. The suggestion that medical laboratories that are already established could be used for that purpose I think is not feasible. Dental research requires special training. A medical laboratory could not have done the work that Dr. J. Leon Williams has done in establishing the method employed by bacteria when they attack the enamel, and a medical laboratory could not have done the work Dr. Black did in finding out the shrinkage and expansion of amalgams. It would require men with a special training in the first place as dentists and men who have had scientific experience. The ordinary laboratories are not fitted to do that work, they have not the apparatus. Dr. Black has spent a small fortune in getting what little apparatus he has and Dr. Wedelstaedt claims to have spent \$10,000 on the little apparatus he has. He has discovered that a great many cements thrown in ink will turn as black in the center as they will on the outside, and teeth might as well be filled with sponges as with such material, and so on through the line. We need such a chair, and I hope a committee will be appointed to see what we can do in this direction. Start it slowly and by and by we can have such a chair established. I think dentists have a great influence, especially in small towns. In such places the minister, the doctor and the dentist are usually powerful for good, and if you have a member of the legislature ask him to vote for such a measure, and I believe by individual and concerted effort we can pull the matter through. We could use the laboratory already established at the university and we could get an appropriation from the State to keep it going.

I think Dr. Owre misunderstood what I said in my paper. I did not say we were a branch of the medical profession. I said we were an important branch of the healing art, and I think we are.

I thank you very much.

DISCUSSION OF DR. PETTIT'S PAPER.

DR. ALFRED OWRE: The elaboration of this method by Dr. Pettit took several years. Dr. Pettit began his laboratory work some twenty years ago and had used the old method of articulation, and then he adopted Dr. Bonwill's method and finally adopted this method, which he has used to the exclusion of all other methods and

with decided success. He referred to the mill wheel as an illustration of one of his points and he has brought a piece of a mill wheel with him for that purpose.

I was so much impressed with this method that when I reached home from Philadelphia I put in four plates in this way. As far as proof was concerned I did not care particularly for further proof, so long as Dr. Pettit had had success for the last six to eight years. I went to work on these cases and the first two I showed to Drs. Wells, Knight, Weiss and others, and they pronounced them successes. That patient came back after three weeks perfectly satisfied. She had used plates a good deal, but she had not worn them with any degree of comfort for twelve years previously. The last two cases I put in just before I left the city, but I am satisfied they will do the work. The doctor has drawn some very fine conclusions in his paper. The fact that the plate must be controlled *en masse* is a valuable point. The mush bite is worthy of a great deal of consideration, as you have no movable wax plates, and patients are not attempting to hold loose wax trial plates in position. There is so much to say on this subject that I will not attempt it, but Dr. Pettit will give several practical demonstrations, which will answer the purpose much better.

DR. WALTER N. MURRAY: This method is so directly opposed to what we have been taught that I hardly feel competent to discuss the paper and the method described therein. I will say, however, while I have not made teeth for many years, yet it has been my practice, especially in work for people more than fifty years of age, to grind all the teeth in making artificial teeth. It was simply because I found in most cases of the natural teeth where they remained this condition existed and thus carried out the natural conditions, and I always obtained good results from that practice. I am glad Dr. Pettit has carried this to the scientific point of excellence he has. I believe it is the proper method and I believe patients will derive more benefit and get greater use from a denture by this system than from any other.

DR. JAMES O. WELLS: I do not think of anything I wish to say in particular at this time, except as Dr. Murray has said, it is a method that is more or less directly opposed to what we have been taught, but there are quite a number of points in this method that appeal to me very strongly and I shall make use of it in my practice in the future. I think that is the only way in which we can determine

whether the method is practicable or not. There are a number of points that seem very valuable and I think Dr. Pettit deserves the thanks of the association for his research. I like the idea of flattening the cusps as opposed to the Bonwill method, because there is no doubt it will give us a better masticating surface. Another commendable point, I think, is eliminating the over bite. There is nothing to hold the lower plate in position except its weight, and it is quite reasonable that the over biting of the cusps has a tendency to render this plate as well as the upper unstable. I will say that Dr. Owre is using it exclusively in his practice and he is getting everything that can be desired from it.

DR. H. M. REID: Dr. Pettit's idea probably is correct enough. He talks about the grinding surface and he has a piece of millstone here to illustrate the idea of a grinder. I would go a little further than the doctor does with this, a little beyond the principle of the millstone. While it is quite true that there are grooves in a millstone, yet they are not there for the purpose of grinding the meal any finer, but it is for the purpose of getting the meal or the flour from the center of the stone to periphery. I claim there is nothing whatever gained by having that groove there, and I also claim from experience that a perfectly smooth surface, if the teeth touch and are perfectly smooth and level, will give just as good results as can be obtained by his method. I am wearing a set of teeth to-day that was made by the Bonwill method. I think it is a great improvement over what I wore before where there was no grinding at all, and I think the gain was due to the mechanical construction that brought the teeth together. This method of making artificial teeth (by the manufacturer) is entirely wrong to my mind. You find nowadays there are many artificial teeth used by persons who are young in years, but I have special reference to artificial teeth used by persons of fifty years or more. I would like to have any of you find a person of my age or of fifty years who presents that condition in the natural teeth. You cannot find manufacturers who make teeth of that kind. Why do not manufacturers make them that way? It should not be so. In the teeth of old people there is usually a perfectly smooth surface. Now I believe he would gain just as much by cutting the cusps down. I use exactly that kind of teeth and I can grind my food with smooth teeth and without the tendency to tip the plate. Each movement back and forward gives it a natural movement; we

have nothing to cause displacement of the plates. Any one who has worn them will testify to that point without any doubt whatever.

As to occlusion there is one fault made by most dentists. They make too much over bite and too close. There should be at least one-eighth of an inch space. There is no other kind of bearing which will throw a plate down so easily as to have the lingual surfaces of the upper teeth impinge on the labial surfaces of the lower.

DR. EUGENE S. PETTIT: I would like to reply to Dr. Reid. I think ten years ago I made Dr. Reid a set of teeth, what were known as hand-stained teeth, which were perfectly graded. It was the first idea I had and he seemed to get so much satisfaction out of it that I asked him if he did not think it was a case of mashing or squashing, and he thought it was, but since then I have ground off almost all of the cusps and made practically a smooth surface, and patients complained that they were unable to cut their food, that it was not sharp enough, so I ground it and increased the depth of the cusp. I think it is very essential they should be rough. Bonwill's method of grinding is rather too smooth. I would like to ask Dr. Reid in regard to this millstone whether it would grind the wheat at all if it were as smooth as plate glass. I would also like to say a word about the bites. I find there is more than one kind of a bite. A person that has worn artificial teeth for a number of years you will find has several varieties, you may find there is not only one, but three or four.

DR. H. M. REID: I would like to ask Dr. Pettit a question. Have you any method or rule where you put in a full denture of teeth above and below to determine the size of the teeth required to fit that case?

DR. PETTIT: I think perhaps in a hundred years to come we may get the thing down that fine.

DR. REID: How do you determine that fact?

DR. PETTIT: I guess at it. I think Dr. Bonwill had some scheme for determining that.

DR. REID: I want to say to you, gentlemen, that last winter in college I accidentally discovered a very simple method by which I think any of you can determine the size of the natural teeth which were in the mouth. If you will take a pair of dividers and measure, setting them here (indicating) until you touch the rim of the wings of the nose here (indicating) and set the dividers for a perfectly normal set of teeth it will show you distinctly what you want to use.

Begin on the line of the canine fossa, and if it is on the line of the canine fossa you can get the size of your natural teeth every time. I have tried it in a number of cases and it has worked every time. In persons with large noses it might not hold good, but in nine cases out of ten it will determine the correct size. You will find by trying it in the mouth it will be about the center of your cuspid teeth looking directly at them. At a front view you will find, in a great majority of cases, if you measure the rim of the nose it will be on a line with the center. It has always bothered us a great deal to get the exact size of the teeth. I have guessed at it the same as Dr. Pettit has, and I believe if any of you will try that method you will find it will get you over a great deal of trouble.

DISCUSSION OF DR. R. C. BROPHY'S PAPER.

DR. MCCREA: I was asked to discuss the paper just a moment before Dr. Brophy began to read. The essayist takes a very broad and liberal view of art as practiced in dentistry and his paper deserves a great deal of commendation. I do not know that it is the duty always of discussors to pick flaws in a paper, but on the other hand to pick out the points that are the most useful to the dentist in general. I think as artists we find our success lies along the line of artistic excellence, because in every piece of work we do, we will take more or less satisfaction ourselves in having it well and artistically done; and consequently we are better able to explain the artistic points of our work to our patients and they become more appreciative in consequence. Therein, I believe, lies the success of the dentist; his ability to make his work appear artistically correct, which means with the patient, as natural as possible. To the dentist every piece of such work gives a certain amount of satisfaction. It is so with me. A great many times, I might say almost every day, there occurs in my practice some operation or some piece of work in which I have a greater degree of satisfaction than in others, and when I call the attention of the patient to this kind of work they take the same pride in it because it is artistically correct.

Another thing that Dr. Brophy speaks of is the sacrificing frequently of utility for beauty and vice versa. I think beauty is hardly the word to use there. We can look at a thing as being beautiful out of the mouth, which in the mouth may be entirely objectionable, such as gold crowns and cusps and gold fillings. Last week I saw two of the most beautiful porcelain inlays I think I have ever seen. They

were mechanically perfect, or at least as nearly so as the art in that direction was able to make them, and I certainly think the dentist who put them in took a greater satisfaction in seeing them in the mouth than he would have in a gold filling. They were in two central incisors, and five feet away I do not think any one could detect that they were fillings. The patient, a young man, was very appreciative of the work.

Dr. Brophy also spoke of imitating nature. That is not always art. There are many things in nature that are positively homely, consequently it is not always art to imitate nature. We see things every day which are simply distortions of nature.

I do not believe there is much more to say about Dr. Brophy's paper further than to say that he takes a very broad and liberal view of art in dentistry, and if we follow his teachings all of us will be better dentists and our patients will be more appreciative of our work.

DR. JAMES O. WELLS: I enjoyed listening to the paper very much, and I think one of the most impressive facts that was brought out is the idea of the close relationship or association between the two arts, the industrial and the fine art. If we are to be successful practitioners it becomes necessary for us to cultivate both. I think in the first place in order that an operation be successful it should be useful; it should perform the function of the organ or organs whose place it is supposed to take; then after that we should bring into play fine art and make it as artistic as possible. It is necessary for us to do this if we are going to be successful practitioners. There are two ways in which we might explain this term success. If we measure our success by the dollars and cents we are able to get out of our practice perhaps a knowledge of fine art would not be so essential, but I think a better measure is the results we get. I think in every operation we should always strive to get the best results obtainable, both from the standpoint of mechanical art and from the standpoint of fine art. It is much easier for us to be artistic at the present day than it was in times past, because we have so many appliances to aid us in our work and so many materials which enable us to be successful from an artistic standpoint and with much less effort than was possible for the men who preceded us in the practice of dentistry. I think no material is capable of giving such artistic results in the practice of dentistry as porcelain. I am especially interested along these lines and have had some experience in the manipulation of porcelain,

and I would like to say that the artistic results from the successful handling of porcelain are far ahead of anything else so far. Take for instance a porcelain crown, while it may not be quite as strong as some other forms of crowns (I say it may not be, I do not say it is not) still it is strong enough to meet and resist the normal stress if you use discretion and employ it when indicated, and how much more artistic this crown is than anything else we have. Take the Richmond crown which was used very extensively a short time ago and is still used. How difficult it is to hide the gold, especially at the gingival margin and around the labial surface of the crown, and how many more cases you have seen where this strip of gold was exposed in this form of crown than you have where it is not exposed. This defect alone defeats one of the most important functions of the operation. Now this same operation can be done by using porcelain crowns, and we can get a result that I will say is almost if not quite impossible to detect from the natural. It is possible to adapt this crown so the metal will be hidden from view. The crown will press snugly against the tissue and the artistic results far surpass anything we have had so far.

Then again the use of porcelain in inlays. This is largely in the experimental stage, but I think there is no question but that there are places where the porcelain inlay is indicated, and in those cases we can get a very much more artistic result with it than we can with anything else.

So if we are to be successful dental practitioners it behooves us to cultivate both the industrial and the fine arts. We owe it to our patients to be able to bring these things to bear so that we can give them the very best that it is possible for them to have.

I enjoyed the paper very much and have nothing but commendation for it.

DR. W. N. MURRAY: I believe all the points that the various gentlemen have brought out in this discussion are very well taken, but we are confronted with some difficulties along the lines of art in our practice in this country. In France, Germany and England, in fact, in nearly all the older countries where they pay more attention to art than we do in this country, almost the first question the patient will ask is, "How is it going to look?" In this country we are asked, "How long is this going to last?" We are confronted with that question and also with the question of what it is going to cost. That is the situation. We have got a great deal to overcome

in a business way in our practice along the lines of art. We have not had experience enough in our practice along the lines of porcelain art to make any definite promises to our patients. Especially is this true of inlays, yet I believe it is our duty to educate the people in these lines. We have all been agitated by this question of porcelain inlays, and I believe the dentist is not progressive who does not perfect himself even if he should never be able to use it in his practice. It is one of the most satisfactory branches of our profession that we can follow, both to the patient and to the operator. I have a number of inlays that I ground and fitted in the cavities that have been doing service for ten, twelve or fourteen years, and are still doing service, although they were very badly fitted. It is impossible to fit an inlay in that way, and it seems to me this modern method of using the porcelain inlay is a great advance and is worthy of our attention and study.

DR. R. C. BROPHY (Essayist): In the first place, I feel highly gratified to know there is so little room for argument. The discussion has been very generous to me and the appreciation very full, leaving me no openings for argument or discussion, so if you will excuse me I will close the subject.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held Monday, Sept. 16, 1901, with the President, Dr. L. S. Tenney, in the chair.

Dr. Robert Aiston read a paper entitled "Peridental Atrophy." (For Dr. Aiston's paper see January number of *THE DENTAL REVIEW*, page 10.)

The discussion was opened by DR. F. B. NOYES. He said: Mr. President—In opening the discussion on this paper, I feel that I should have written out my discussion in order to do the paper justice. As it is, I shall have to talk from what notes I made during the reading. The paper represents very careful and painstaking clinical observations, and it is to be most highly recommended for that. It emphasizes very strongly the use of the peridental membrane, and the necessity for such use in order to maintain it in a normal, healthy condition. It is a fibrous membrane, made up of what may be likened to ropes. It literally swings the tooth in its socket. The tooth is not immovably fastened to the bone, but with

every occlusion of the jaws the teeth move more or less, although we may not be aware of it. The peridental membrane is also a very vascular membrane. Imagine, if you please, a lot of strings running from one object to another, and winding in and out among the cords a lot of rubber tubes full of fluid. Tighten those strings by pressure on the suspended object, and you push the fluid out of the tubes; remove the pressure, and the tubes fill up again; press down, and the fluid is crowded along the tubes. That maintains normal circulation in the membrane, keeps up the tone of the blood vessel walls, and gives that membrane a firm tonic condition.

Many things brought out in this paper have not been sufficiently borne in mind by the profession. The fibrous tissue surrounding the tooth and covered by epithelium, is a somewhat similar though different fibrous tissue, and it is dependent for its normal firm condition upon the friction caused by mastication. The gums should be hard; they should not be easily injured; and food should not easily crowd down between the free margin of the gums and the teeth, if the tonic normal condition of the blood vessels and the fibrous tissue has been maintained by use and friction. Remove that use, that influence upon the blood vessels, and the blood vessel walls degenerate and become more susceptible to inflammation.

However, there are things in the paper which I feel must be criticised, not so much for themselves, but because they represent a tendency of thought existing in the medical and dental professions to-day. There are two things necessary for the advancement of pathological knowledge. One is painstaking clinical observation, and the other equally painstaking and careful research. We must not only know the symptoms, but we must know the structures of the tissues both in health and in disease in order to appreciate these symptoms. If we have not studied the tissues sufficiently, we are liable to mistake or misinterpret symptoms; we are likely to think that a certain condition is not present when it really is. The writer objects to the term *pyorrhoea alveolaris*. I think we have all practically discarded that term. It means nothing, so why should we retain it? Literally, it means a flow of pus from the gums, but says nothing more about it. It may represent a hundred pathological conditions of the involved tissues. He also objects to the term *phagedenic pericementitis*. I should not translate this term exactly as he did. It is a destructive inflammation of the membrane. The word *phagedenic* is used in its original meaning, namely, to destroy

or eat up. The term means a destructive inflammation of the peridental membrane. The essayist said that phagedenic pericementitis was not an inflammation, basing his argument on the absence of one symptom of inflammation, namely, pain. I think the essayist had in mind acute inflammation, and did not consider the subacute and chronic varieties which are as true inflammations as the acute, but are not manifested by the cardinal symptoms, pain, redness, heat and swelling.

Inflammation is a condition of the blood vessel walls which permits of the escape of a serum, white corpuscles, and sometimes red corpuscles. In an acute condition that escape of serum and corpuscles causes swelling, pain, heat and redness, but in a low grade, chronic inflammation you have the passage of materials through those vessel walls constantly, and there is very little swelling and no pain. That condition is an inflammation, and it is present in the condition known as phagedenic pericementitis; therefore, that disease is an inflammation.

There is at the present time a reaction against the germ theory of disease. It is manifesting itself all over the world. The essayist said, "There are no diseases which flesh is heir to that are primarily caused by microorganisms," and he illustrated it by saying that if there were, every person would have the disease, that all of us would have decayed teeth, for instance. This represents a somewhat loose line of thought which is current in the medical literature. We might just as well say that acorns are not the cause of oak trees, because if they were, the whole country would be covered with oak trees, wherever acorns fall upon the ground. As a matter of fact, remove all the acorns from the earth, and you could not produce an oak tree. Likewise, remove every tubercle bacillus from this globe, and it would be impossible to produce tuberculosis. The point is this: The microorganism of tuberculosis is the one essential cause. Without it, it would be impossible to produce the disease; with it, it is impossible to produce the disease unless other conditions are present. You may have the germ, but not the condition, and therefore have no disease. You may have the conditions and not the germ, and therefore no disease. But, given all the conditions and no germ, and you cannot produce the disease. The same thing is applicable in caries of the teeth. It seems to me that we have proven conclusively that germs are the cause of certain diseases, but now, just because we are beginning to study some of the condi-

tions essential for these causes to work, some would throw doubt upon the efficiency of the germ or its relation to the disease as a cause. We must know not only the relation of the germs to the disease, but also the relation of other conditions to the activity of the germs.

Perhaps we ought not to call *pyorrhoea alveolaris* a disease. It is a pathological condition which we are called upon to treat, but is it a disease? A disease ordinarily is a condition which has a single definite cause and which is characterized by a certain definite and recognizable series of symptoms. We must remember that distinct from diseases we also have pathological conditions. For instance, a patient may have tuberculosis or acute diphtheria and recover. There has been present in his system an acute poison which has been eliminated, but as the sequelæ of the disease we have an indefinite number of pathological conditions. We may have an acute inflammation of the kidney, a pathological condition, but not in that sense a disease, since it may be produced by a great variety of causes. It occurs to me that we have the same condition to deal with in the periodontal membrane. We have been endeavoring to put all the pathologic conditions of the periodontal membrane under one name and make it out a disease of that membrane. We have given this up absolutely, and now have two classifications, one, calcic inflammation, and the other phagedenic pericementitis. Possibly these two names will not cover all the conditions. We have been inclined to look at the periodontal membrane and its pathologic conditions, as altogether too simple a matter. It is not a simple tissue, and it is liable to be affected by many conditions, all of which we must take into consideration. What we need most at the present time is a better knowledge of the normal and the pathologic conditions of the related tissues. In order to determine whether or not we shall call this an atrophy, we must know whether there has been a reduction in the size and number of the tissue elements, or whether there is an increase of tissue elements. The essayist seems to regard it as a death resulting from the atrophy. There is first, as he describes it, a reduction in the number and size of the tissue elements, and that this finally leads to death. Pathologically, atrophy alone does not imply death; it implies merely a loss of function of that shriveled tissue which is not dead. I think that we have periodontal atrophy; that we have a reduction in the size, number and vitality of the tissue elements. We also have actual death of these elements. We know but little of the relations existing between all of these causes.

Very much more could be said on this very important subject, but what I want most is to see more men study their cases as the essayist has done, and note fine distinctions in the pathologic conditions as they see them in the mouth, then follow those conditions back to causes and structural changes.

DR. GEORGE W. COOK: I have been very much interested in this paper, but it would be impossible to discuss all the points brought up by the essayist. I think that if I were going to write a book on pathology, I would take the first two-thirds of the doctor's paper for my first chapter, because he has brought out all the points that are usually introduced in a book of that character. Dr. Noyes referred to a portion of the paper I had in mind, namely, the difference between germs that produce disease and the predisposing cause of disease. He speaks of atrophy as the cause of the disease in one instance, and in another speaks of it as a predisposing cause. Doubtless, disuse of the peridental membrane is simply a predisposing cause, but it is not the exciting cause. Dr. Noyes has referred to tuberculosis. Everybody is more or less exposed to the germs of tuberculosis. Twenty-five per cent of the human race have it. There must be something that gives lodgment and favors the propagation of the germ.

Another point is that there is no germ that produces a distinct and definite disease. I think there are many. The germ theory is a potent factor in disease, and we have demonstrated conclusively that certain germs will invariably produce certain diseases. The fact that there is no pus surrounding the tooth is no evidence that it is not a germ disease, because there are many germs that produce a disintegration and destruction of the tissue without producing pus. There are diseases of the nails and hoofs and hairs of cattle, which are apt illustrations.

Like every one else, I, too, object to the name *pyorrhoea alveolaris*, but we have it, it has served a purpose, and when the study of this disease is far enough advanced, and when men are well grounded in the normal as well as the abnormal condition of tissue, the name will disappear, and one will be given us that will be sufficiently descriptive of the process.

How any one can say that we have the loss of teeth and disease processes without germs, or some agent that acts on tissue, is more than I can understand. We have no disease process that is not started by some agent. Of course, there is a predisposing condition.

Take, for instance, the maple trees in Chicago. Those trees which stand closest to a cement sidewalk show more scars and irregularities of the bark than those standing farther away. The environment of that tree makes it possible for the worms to destroy the tree; in other words, it is a predisposing factor. The same is undoubtedly true of pyorrhoea alveolaris. It may be disuse, or abuse. We know that the condition exists, and we are supposed to relieve it or cure it, but the disease will return so long as the predisposing cause exists, so long as the physiologic functions of the individual are such as to bring about a condition favoring the development of microörganisms, so long as there is a predisposition to disease, so long will we have pyorrhoea, cure it as often as you may. When you remove the predisposing cause, as well as the direct cause, there can be no question as to the duration of a cure. The thing we are most confused on is the differentiation between predisposing causes and exciting causes of disease.

DR. TRUMAN W. BROPHY: I desire to compliment the essayist. He has been highly endowed with a good voice, with distinct articulation, perfect phonation, and the ability to present a paper in a delightful manner. He has devoted a great deal of hard work to the preparation of this paper, and exhibited a degree of enthusiasm most commendable. He has brought out a great deal to discuss, and he has presented it in an admirable manner. While I agree with him in part, I must disagree with him in some respects, and what I say I hope he will accept in the kindest spirit, as it is intended. I well remember the first paper I ever read in a dental society. The gentleman is here to-night who attacked me in his usual vigorous style, and when he was through I felt sorry that I had ever attended that meeting. But, after all, I went home and prepared another paper, on the same subject, which I read two years later, before the same society, and had the satisfaction of convincing many who had opposed me that my views were correct. What he said at that time did me more good than harm, although the criticism was pretty severe.

I want to criticize the doctor's paper in more ways than one. The first criticism I will make is this, and it is said in all candor— it is too long. Had his paper been divided into two papers, it would have been better for him, and we would be able to remember its most essential features and discuss it better. The last part of his subject might well have served for another excellent paper. The nomenclature he has suggested is simply a multiplication of terms of which I

think we have already too many. This disease first claimed our attention a number of years ago, under the name, Riggs' disease. Then the late Dr. Rehwinkle, of Chillicothe, Ohio, read a paper in Chicago in 1877 on this affection, and he named it pyorrhoea alveolaris. Since then it has been called calcic inflammation, and Dr. Black proposed the name of phagedenic pericementitis. It has been further divided into pyorrhoea alveolaris simplex, and pyorrhoea alveolaris complex, with numerous subdivisions. Another term is interstitial gingivitis, and now, to-night, we have still another name proposed peridental atrophy. Eight names for one condition, which is nothing more or less than an inflammation, the counterpart of which we see in other parts of the body. Our friend this evening proposes peridental atrophy, and asks that some one suggest a better name. A better name was suggested long ago, and that by a surgeon, a man acquainted with pathology in all its different phases, one who spoke of this as he would of any other condition in the body. The name is simple, and exactly describes the condition. It is not possible, by the use of any one name, to impart to the mind of the hearer a knowledge of all the pathological changes pertaining to the condition. If it were so, all we would need to use and recommend to our students would be dictionaries. Therefore, we must use something else besides dictionaries when we endeavor to impart a knowledge of pathological conditions. The name proposed by Dr. Senn, and in my opinion the best ever suggested, is *dental alveolitis*. What more do you want? What more could be said to cover this morbid condition than that? You have osteomyelitis, but in mentioning that name you would not for a moment attempt to impart to your hearer a knowledge of all the phases of pathology pertaining to that affection. *Dental alveolitis*, gentlemen, is a name vastly superior to all the others suggested. I believe that the members of our profession have spent an immense amount of energy and time without fruit in the devising of new names to cover this simple condition. If they would only stop coining names and study the true pathological condition before them, they would accomplish far more for their patients. I never regarded the condition as a mysterious disease or one difficult to comprehend. We may or may not have a foreign substance present. The essayist has humorously said when the teeth are out of use they fall into loose habits. What is one of the essential principles in surgery, which has been observed since the beginning of the history of surgery, and surgical literature,

in the treatment of these conditions? When a part is in an abnormal condition, put it to rest. When teeth are loose, put them to rest. How? By securing them to those teeth that are firm. If deposits are present, you can easily determine that by the X ray, or an instrument; remove them. Make use of the stimulating applications to the parts, relieve the congestion, and then if you do not succeed in arresting the suppuration and bringing the parts back to the normal condition, take still another step. I have had the extreme pleasure in the last few weeks to witness what it is possible to accomplish by the use of electric rays of high frequency and high potency. In the London General Hospital I saw in one day thirty-four patients under treatment for lupus, the only treatment being the concentrated electric rays. I saw cases about cured, and others which were dismissed as cured, having been cured by no other treatment than the application of the light upon the diseased area. I also saw persons suffering from pulmonary tuberculosis treated in exactly the same manner, the germs of the disease being obliterated by this process. If this has been done in the cases mentioned, it brings to the sufferers from this particular disease a great boon. If that can be accomplished in the destruction of pathogenic bacteria, what may we expect by the use of light in the treatment of cases of pyorrhoea alveolaris in which there are no deposits, but where there is suppuration or a lack of vitality. Teeth become loose, and when they are removed we find them absolutely free from serumal calculus, and salivary calculus. If we use this light skilfully, as we all can, I think we will find this disease as amenable to treatment by the concentrated light as the more formidable diseases I have mentioned. We must first know the cause of the disease, and then, having removed the cause, we can accomplish nothing better than rest, antiseptic and stimulants.

DR. AISTON (closing the discussion): I wish to thank the gentlemen for their very kind consideration of my paper. I expected that my stand on the germ theory would be quite vigorously attacked. However, I said it knowing all that has been said in the criticism here to-night on the subject, and I am not the only one who holds these views, as you well know. I merely repeat what has been said by others—men whose names I am not worthy to mention.

It is believed by some that germs at one time were not pathogenic, but that they have become so by their environments. It has been said by eminent men—I do not remember who, but I believe it—that all germs were at one time simply a low form of vegetable life,

having an office in the great economy of nature, but due to their environments have become pathogenic. It is said that you can take the most virulent germ and bring it to a state of impotency by planting it in certain soils. I believe that certain germs do produce certain diseases in animals when they find lodgment in tissues which are in a low degenerate state. I do not believe that germs originally and primarily are the cause of disease, but that the real cause is a degenerated and low state of the tissues. I think we will be better understood on the germ theory in the not distant future.

I did not write this paper particularly to criticize the nomenclature of the disease; I simply wished to bring out the facts as I believe the facts to exist, that this disease is brought about by a nonuse of the teeth; that they do not get the proper exercise for which they were intended, and that I believe that the disease can be prevented by the proper use of the dental tissues. That is practically what I have written the paper for.

I feel that I have been misunderstood on some of the statements in this paper, but that may be my fault, not the fault of my critics.

NORTHERN ILLINOIS DENTAL SOCIETY.

CLINICS AND DEMONSTRATIONS.

DR. UNDERWOOD—Crown or bridge repair—without removal from the mouth, in case of broken facing. Grind slots in backing for reception of pins of new facing, which is then backed up with pure gold engaging end of pins and covering slots and lingual side of bridge or crown, after which it may be cemented in place, completing the operation.

DR. H. W. DAVENPORT displayed samples of his pyorrhoea treatment, giving method of procedure. Unfortunately, the doctor was unable to be present in person on account of illness.

DR. F. W. STEPHAN—Matrix and pad: Any matrix may be used. A simple one is preferable. The pad is made of tin and gold (or some other foil) folded to from four to eight thicknesses and cut a little larger than the matrix. This is laid on the face of the matrix and the slight surplus folded over the cervical edge. In this form the matrix and pad are carried together between the teeth and wedged firmly to place. The pad is then cut along the lingual and buccal margins and the portion within the cavity is condensed against the cervical wall. The advantages of this procedure are,

first, that the matrix is held slightly away from the cavity margin, allowing of easy access; second, the cervical margin is easily and surely covered, and, third, the pad protects the cavity margins from danger of fracture in wedging.

DR. W. V.-B. AMES showed his method of treating desperately loose teeth, i. e., teeth which have entirely, or almost entirely, lost their attachment to socket wall, many of which are going about with the support of silk or wire ligatures, or the so-called figure 8 gold bands which are very unsightly and about as objectionable as the all gold teeth, too often seen even in respectable circles.

In this method the pulp is devitalized, the tooth amputated somewhere between the enamel line and the present gum line by piercing labio-lingually with a small spear drill and then cutting laterally with a fine fissure bur. The root is then shaped as for ordinary crown process and measurement taken. A band is cut of the combined width desired for root and crown portions. The band is fitted to the root and this general shape given to the entire band. The root end of band is now imbedded in lumps of ideal base plate to keep shape while crown portion is being fitted into the other end. A line is now drawn on the outside of the band corresponding to the end of crown portion and a saw passed on this line till it marks the inner surface at opposite side. A flat piece of gold is placed in this slot and soldered. This diaphragm is perforated to pass a No. 17 wire into the pulp canal of crown, which has been prepared that size. After treating all teeth affected in this way the parts are assembled as in ordinary bridge work, crown cemented and whole cemented to roots.

DR. W. H. TAGGART showed a new regulating valve for nitrous oxide blowpipe which will be indispensable to platinum gold soldering. This device is being perfected by Mason & Co., and will doubtless soon be placed upon the market. Another contrivance of merit was an instantaneous steam producer for melting out wax from any case whatsoever. This consisted of a small 12 foot copper coil tubing over Bunsen burner.

DR. W. T. REEVES gave an interesting porcelain clinic. The case was a mesial cavity of upper right central, adaptation very perfect, color good. In fact, an exhibition of his usual meritorious work.

The R. C. Brophy gasoline burner and furnace—an excellent combination device for all heating purposes in laboratory, from heating water to fusing porcelain, consisting of an original burner mixer

attached to the ordinary form of plumbers' gasoline torch, producing an intense flame which readily fuses the high fusing bodies in two to five minutes. The advantage claimed lies in the mixing of gasoline in furnace muffle instead of outside, as in other makes. With the burner is also a blowpipe attachment, permitting heating and soldering of case from same tank.

DR. ALLEN—table clinic of articulating and baking porcelain crown from dowel and band, in plaster articulator. Excellent results in articulating and carving.

DR. J. E. HINKINS applied, for retention of the four lower incisors, a splint made of Kowarska cement. This cement is composed of celluloid 160 parts, acetone 400 parts; time for cement to set one and one-half hours. The evaporation of the acetone through frequent opening of stopper gradually produces a thicker mix of quicker setting qualities. It seems an admirable device for stability and its color, a pure white, is quite unobjectionable. Dr. Hinkins has had two splints on nearly a year and Dr. Kowarska, of St. Petersburg, says two or three years is its true expectancy.

DR. KERR showed his idea in getting up his articulator along anatomical lines that would mimic the movement of the lower jaw. To do this he located the actual hinge of the jaw in a line with the grinding surface of the molars and bicuspid, also to have a side rear motion or the so-called lateral motion. Also to have an adjustable slot on either side that could be regulated at any angle to conform to the different temperaments of the patients or the different curves of the lower jaws.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

THE PRESENT STATUS OF INLAY WORK.

The active interest in inlay work as exhibited in societies and clinics would seem to indicate that this work is something more than a passing fad. It can hardly be expected that it will eventually prove all that its enthusiastic advocates claim for it, but it assuredly has a wide and legitimate field in dental practice, and must not be ignored by progressive men. The great danger is that enthusiasts will carry it beyond its legitimate sphere, and that unqualified men will employ it when it is not indicated, to the end that discredit will be brought upon it.

Discrimination is required here as in every line of practice. For instance, the placing of thin edges of porcelain in positions where appreciable stress is brought to bear upon them will sooner or later result in disaster. It is true that in every new idea there is great likelihood of men making mistakes, some of which seem inevitable, but a little study of the nature of porcelain in relation to the character of usage which it must bear in these positions, would make it appear too apparent to admit of failure in judgment. And yet we see porcelain built out to thin edges and cemented in cavities.

The form of some cavities is such that this cannot well be avoided, and we predict failure in such cases where porcelain inlays are used. But the truest teacher is experience, and this question — as all others — must level itself upon the basis of an extended trial.

That inlays are indicated in many cases cannot be denied, and it remains for us to study most carefully the indications for and against their use, so that we may discriminate accurately and give our patients the best of that which modern dentistry affords. The dentist who ignores inlays makes a mistake.

DR. CROUSE TO BE CONGRATULATED.

Dentists who have carefully followed the litigation between the International Tooth Crown Co. and the Dental Protective Association, will be pleased to learn of a recent decision in New York in connection with the James Orr Kyle case, which in July, 1899, caused something of a sensation among the profession. It will be remembered that at that time a decision favorable to the Crown Co. was obtained, and although the Protective Association was in no way connected with the case, yet dentists were greatly alarmed as to the possible outcome.

Dr. Crouse, President of the Protective Association, had suspicion that the suit was carried through by collusion, and instituted proceedings to have the decision set aside. After a lengthy period of litigation the announcement was made in January, 1902, that Judge Townsend, who presided at the original trial, had set aside his former decision, thereby leaving the Crown Company back where it was five years ago when the Low bridge patent had been declared invalid.

Dr. Crouse is to be heartily congratulated on the present turn of events, in view of the strenuous efforts he has made on behalf of the profession in this contest.

ACTIVITY IN DENTAL THOUGHT.

It would seem as if there never was a time in the history of the profession when men were so vigorously active in dental thought as they are to-day. This thought is for the most part taking what is called a practical turn, though there are some who are studying the purely scientific problems of the profession.

It is sometimes said in a deprecating way that there is little real advance among dentists, and that society proceedings and dental literature generally is simply a rehash. Much of this may be true when viewed merely from a critical point of view. It is so seldom in this good old world of ours that a really new thought is evolved. Most progress is a matter of growth with a few startling points of radical advance here and there.

We cannot all be brilliant original investigators, but we may be patient plodders after the truth, and it is the plodder who really does the greatest good after all.

The active interest in clinics and the big attendance would seem to indicate that dentists are not in an unpromising mood so far as a desire for material advancement is concerned. And if the pessimist thinks that there is little activity of thought in the profession let him commingle a great deal with individual dentists and get into their inner circle, and learn what they are thinking about. He will be treated to many a surprise by men who do not make much of a public stir in the profession. The mechanical ingenuity of dentists is proverbial, and in this pursuit many men are developing much in a quiet way for the ultimate good of all.

It is never safe to have an uncomplimentary fling at your profession until you know a great many of its members personally. Dentists are doing their full share in alleviating human suffering, and there never was a time when they were studying harder than they are to-day.

THE EDITOR'S DESK.

GOOD FELLOWSHIP.

I have just received an invitation which sets me thinking. It is as follows: "The Streator Dental Fellowship Club will hold their annual meeting and banquet on Tuesday evening, February 18, 1902. You are personally invited to be present at the meeting and banquet as the guest of our club. Meeting called at 8:30. Headquarters at the Plumb House. Dr. C. R. Taylor will read a paper on 'Good Fellowship.' After the reading and discussion of the paper the banquet will be served at Chas. Leuter's Café, No. 110 Main Street."

To those who are not informed, I may state that the "Streator Dental Fellowship Club" is an organization in the town of Streator, Illinois, which was started several years ago for the express purpose which its name implies. It is a club of good fellows, but the significant thing in this connection is that most of the fellows have become good since the organization of the club. This does not altogether imply that they were not good before, but simply that they didn't know it. The fact is that the Streator dentists were probably about the same class of men who are

usually found practicing in towns of a similar size throughout the land. I have no authority whatever for my assumption, and yet I venture the assertion that in their inmost hearts most of them thought the other fellow wasn't any better than he should be. They probably spoke to each other when they met on the street, but they didn't throw their arms around each other and hug.

If a patient came to one of them complaining bitterly and unreasonably of a neighboring practitioner, they probably did not send the patient right about face to have it out with the original dentist. If the truth were known it would be a great wonder to me if they didn't occasionally give each other a sly dig under the short ribs when a real good chance presented.

But what is the condition of affairs now in Streator? I am confidently informed that one Streator dentist will take off his coat and fight for another at the drop of a push-cut scaler—that is if you can get them to fight at all. Most of the fight seems to have been taken out of them, though they have lost none of their manly vim and vigor. They are really a harmonious body of professional gentlemen, and it is charming to see them hobnob together when away from home attending the State society or other large meetings.

And what has brought all this about? Largely the organization of this Fellowship Club. One of the older practitioners conceived the idea that they were not living up to their highest possibilities in the old way, and invited some of his younger friends to join him in the formation of a local society. And this gives me the chance to say that the initiative in such matters should usually be taken by the older men. There is less opportunity to question the motive when this is the case, and besides the younger men need encouragement.

Well I need not say anything more about Streator, except to affirm that what Streator has done other towns can do. In fact many towns are doing it. Look at Rockford, Ill., for example. They have a local society there also, and—but did you attend the State society meeting there last May? If you did, then I need not tell you anything about the kind of men they have in Rockford. Such fraternity, such good fellowship.

And then there is Madison, Wisconsin. It is worth a year

of an ordinary lifetime just to spend a day with those fellows. They have a vigorous society there, an auxiliary of the Odontological Society of Chicago, and the railway lines between Chicago and Madison do a better business on account of that fact. We go up there to meet with them and they come down to meet with us, and we are all the better for it.

Fort Wayne, Indiana, has its "Isaac Knapp Dental Coterie," a society that is doing great good, and promoting good fellowship. I might mention other places, but these are sufficient to point the moral.

Good fellowship means much for the betterment of the profession. It knocks off the rough corners of professional jealousy, and makes broader men of those who indulge in it. To sit elbow to elbow with a fellow practitioner around a dinner table and exchange experiences with him is quite likely to reveal a better phase to his character than you had ever before given him credit for. It—but hold, I may spoil Dr. Taylor's paper at the Streator meeting if I keep on.

One word more. If I have a reader who would like to see what real good fellowship is, let him go to Streator, February 18. He will be made royally welcome, I am sure.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

February 6, 1902.

TO THE EDITOR OF THE DENTAL REVIEW:

The thirty-fifth anniversary meeting of the New York Odontological Society was held at the New York Academy of Medicine, 17 West 43d Street, on Tuesday, January 21, 1902.

The afternoon meeting was devoted to clinics, which began soon after 2 o'clock. They were more than interesting. The announced programme included the following, but there were some slight deviations:

Dr. G. W. Schwartz, of Chicago, making and setting a porcelain bridge.

Dr. Geo. Evans, of New York, demonstrating the use of gutta-

percha cement for setting crowns and bridges, exhibiting new instrument and appliances for its manipulation.

Dr. Robt. Good, of Chicago, treating a case of pyorrhea and exhibiting a case under treatment.

Dr. Joseph Head, of Philadelphia, demonstrating a new method of bleaching stained enamel.

At this session, Dr. Hinkins, of Chicago, read a paper on the "Further Consideration of the Disintegration of Cements when Used in or Around the Teeth."

Dr. W. E. Griswold, of Denver, demonstrated his system of removable crown and bridge work.

Dr. Schwartz's exhibition was very good. It consists particularly of a system of trussing the span from pier to pier of the bridge with metal bars, etc., so as to insure strength of the appliance, after which porcelain is applied to cover the same entirely.

Dr. Evans announced that he was not yet prepared to show his gutta-percha cement.

This was somewhat of a disappointment as several remarked to me that they had come to the clinic especially to see the Doctor's clinic. Dr. Evans showed instead his series of fusings of porcelain body in matrices, demonstrating the relative expansion and contraction of the high and low fusing materials. As has been announced before, the low fusing shows much more contractile power and some distortion of the matrix, while the same is not true to the same extent with high fusing body.

Dr. Robt. Good brought his patient from Chicago to demonstrate what can be accomplished by positive instrumentation, followed by treatment with warm, lactic acid. He says that he never enters a pyorrhoea pocket but once, that at the first time of treatment. A few teeth had been left without treatment which gave those examining the case opportunity to form some estimate of the good accomplished.

Dr. Joseph Head's method of bleaching stained teeth consisted of applying the dam, then using twenty-five per cent pyrozone applied to the outer surface of enamel, heating same by the application of a *hot* instrument applied to the cotton. Those stains (ferric in character) which would not be removed by the pyrozone were treated to a bath of oxalic acid, probably twenty-five per cent, not less. The operation was done for a youngster brought in

from the street, who had teeth quite badly stained. It was quite successful.

Dr. W. E. Griswold exhibited his system of removable bridge work, which has been described many times before. Nothing new was elucidated this time.

Dr. C. A. Timme, of Berlin, Germany, formerly of New York City, surprised many of his friends by appearing among us at the clinic. He came with one of his electric furnaces, which contains as a principal feature the easily removable sections which greatly facilitates the ready and rapid repair of the furnace in case of a "burn out."

In a room adjoining the clinics Dr. Hinkins, of Chicago, read the paper already referred to on the "Disintegration of Cements."

The paper treated saliva from the histological, physiological and pathological standpoints. A few points most impressive are that saliva is formed by intercellular granules, and that mixed saliva is at its height of alkalinity in the morning. The saliva of smokers is two or three times as acid as that of non-smokers.

Saliva is a very unfavorable medium for some microorganisms, and that of young girls, while menstruating is of an entirely different character from that of other persons.

The doctor gave the components of cements in general and concluded his paper by saying, practically, that under the circumstances cements do fail and must continue to fail. All present expected to have many things of much interest disclosed that might go a great way, if not entirely, toward solving the problem of the disintegration of cements, but were disappointed.

The attendance at the afternoon meeting was unusually large. Probably 150 persons were present, among whom were such representative men as Drs. Donnally, of Washington, McManus and son, of Hartford, Conn., Chas. Butler, of Cleveland, L. D. Sheppard, of Boston, Spicer, of New York State, Finlay, of Washington, P. L. Hull, of Jamaica, T. E. Weeks, of Minneapolis, Dr. Crowel, of London, Dwight Smith and the brothers Latimer, of New York, G. A. Mills, Dr. Hess, the recently appointed army dental examining surgeon, and a host of others. All the officers

of the society were present, together with the expresident, W. W. Walker, who in reality prepared the feast of the day, both afternoon and evening.

The paper for the evening meeting of the Odontological Society, was a masterpiece.

The president, Dr. J. F. P. Hodson, presided and did the honors very gracefully.

About 200 were present, which filled the large hall of the Academy of Medicine quite comfortably. All the usual red tape business of the society was summarily dispensed with, so that the essayist of the occasion might not be impeded. Dr. A. W. Harlan was announced formally. He certainly needs no introduction to this eastern contingent, for he is beloved by us all for his ever readiness to help the Odontological. He announced that this is the twenty-first year of his attendance at this society's gatherings.

Before dealing with the main subject of the evening, by request, the doctor gave a résumé of "Digesting of Tooth Pulps in Multiple Rooted Teeth." Many know that this practice is conceded to be the only reasonable resort where pulp canals are minute, tortuous and many, some of them inaccessible. The ingredients for obtaining digestion are papein, glycerine and hydrochloric acid. This is sealed permanently in the pulp chamber of those teeth where the pulps are partly vital, etc. Dr. Harlan claims that no putrefaction is possible subsequently.

The paper of the evening was then taken up, the subject of which was "The Basis of Dental Medicine."

Dr. Harlan certainly must have spent much time in its preparation, not that it was a lengthy essay, but owing to its completeness and absence of superfluities. It can truly be ranked as a dental classic of the highest order.

In its substance is dental medicine in a nutshell. Those who do not read it and memorize all that it contains will have much to regret. A few items gleaned from it are that:

"Clinical therapeutics have accomplished very little for medicine." "Living protoplasm is slightly alkaline." "That all drugs are not absorbed through the skin. It requires oleagenous solutions to accomplish this." "Acids overwhelm, starve, destroy pathogenic germs;" and he asks the question, "Why not use in the treatment of pyorrhoea?" "In pericementitis absolute rest

of parts is required." The doctor also gave the formula for an iodine paint which is indispensable for the treatment of such conditions where indicated, after which the administration of one-sixtieth grain of tr. gelsemium every hour works wonders. "Neuralgia should be treated by the removal of the causes of pain, not the indications."

Dr. Harlan's paper was replete with just such good common sense (pardon me) as what I have outlined. The discussion certainly could elicit nothing but praise from all.

Dr. Jarvie said that it should be a paper of reference.

Dr. Head had much to say against the general use of drugs. It was clearly evident that he misinterpreted the essayist.

Dr. Starr said, in particular, that much of our practice to certain extent must be empirical.

The multiplication of drugs in our armamentarium is confusing, was said by Dr. J. I. Hart.

Dr. Perry looks upon the paper as a mode for all time and is certainly the result of long and careful study.

Dr. Kingsley (Norman W.) was present. He remarked that the society ought to be thanked for its ability to have such material at its disposal.

Dr. L. D. Sheppard, of Boston, saw no criticism that he could make, but applauds the foundation of all our medical practice.

Dr. Sanger thinks it marks the beginning of a new epoch, a higher medical education.

Dr. C. Butler, of Cleveland, also Drs. Hinkins, of Chicago, C. S. Stockton and W. W. Walker had something to say.

Dr. Harlan said but a few words in closing the discussion, and then a surprise pure and genuine was in store for him.

Dr. W. W. Walker took the floor and in well chosen, feeling language told Dr. Harlan that the members of the Odontological Society, appreciating what he had done to advance the interests of this society, in addition to what he has done for other societies and the profession at large, as a mark of appreciation asked him to accept this "loving cup." Distance nor time was no object to him. He was always ready, etc.; etc.

Dr. Harlan stood, during Dr. Walker's remarks, the tears streaming down his sympathetic face.

After the applause died away all were keyed to fitting remarks from the recipient, and they came forth, with a voice full of earnestness.

"Gentlemen, I thank you."

The meeting adjourned and repaired to the banquet hall back of the meeting room where a collation was served and all drank, love, happy days, good fellowship — to Dr. Harlan from "the cup," which had been filled with the sparkling beverage.

This annual meeting of the Odontological Society stands out, among all its predecessors that it has been my good fortune to attend, as one of the noblest, most feeling occasions ever held.

The January meeting of the New York Institute of Stomatology occurred on the evening of January 7, at the office of Dr. Charles Otis Kimball, 27 West 38th Street, Borough of Manhattan. The president, Dr. J. Morgan Howe, in the chair.

Dr. George S. Allan read a paper which provoked much discussion, both for and against the "Blackites," as followers of Dr. Black's theories are termed here in the East.

Prof. Thos. E. Weeks, of Minneapolis, was present, and on invitation, participated in the discussion, claiming that after all was said and done there was not so much difference in actual practice between the "wild and woolly West" and the "effete East."

Drs. F. Milton Smith, H. W. Gillette and E. A. Bogue also took part in the discussion. While all admitted that there was often a pressing need for "extension for prevention," but very few would agree that it should be the regular practice. Prof. Weeks claimed that he never saw in the West the *small* proximal cavities of which several spoke, and which, it was claimed, should never be enlarged to or beyond the gum margin.

For many years it has been the custom for the 1st and 2d District Dental Societies, Southern New York, to take turn and turn about for the annual meeting early in January. This year it fell to the lot of the 2d District, or, as frequently called, the Brooklyn Society, to act as host, and right well did they do their part. All the dental societies in and around New York were formally invited. That meant the 1st district, the Odontological, the Institute of Stomatology and the Central Dental Association of Northern New Jersey, were all well represented.

A very attractive programme was presented and several prominent men from Boston, Chicago, Philadelphia and Washington were present.

The programme presented a list of questions which had been submitted to the essayist of the evening and to those who had been specially invited to discuss the paper.

The essayist was Dr. Hart J. Goslee, of Chicago, and those particularly invited to discuss the paper were Dr. Wm. P. Cook, of Boston, and Dr. Frederick A. Peeso, of Philadelphia. Among other prominent men present who participated in the discussion we noted Dr. Ottolengui, of New York, Dr. Jos. Head, of Philadelphia, and Dr. E. A. Bryant, of Washington. The following portion of the programme shows the queries which had been submitted to the essayists :

Subject for the evening :

"THE ETHICS AND PROSTHETICS OF CROWN AND BRIDGE WORK."

Analysis of problems for discussion :

(Queries having been presented to the essayists.)

1st. Is it warrantable to crown a tooth or root having a living pulp without first removing the pulp, especially where the root is to be used as an abutment for a bridge ?

2d. Is it warrantable to use window or open faced crowns, especially where the teeth to be crowned are sound ?

3d. Is it warrantable to incise the natural crowns of sound teeth in order to crown a root in bridge work ?

4th. Should permanent bridges be made with or without saddles ?

5th. How should we supply a single anterior tooth, the adjacent teeth being sound, especially central incisors ?

There seemed to be considerable difference of opinion in regard to the first question. Some seemed to think it advisable *always* to devitalize, while others took the opposite view.

Window, or open faced crowns came in for much condemnation. Even those who admitted occasional use of this form of crown spoke of the disadvantages.

There seemed to be an unanimity of opinion regarding the third question—all the bridge workers deeming it always warrantable to thus excise sound teeth. This question was intimately connected with question No. 5, as will be seen later.

Concerning saddles, there was a great difference of opinion. Dr. Head quite getting the laugh on Dr. Goslee when he de-

scribed the state of affairs under a saddle as being *superficial stasis*.

Dr. Head perhaps pointed out one of the most important points necessary to be considered, i. e., the fact that the teeth are not immobile, and that bridges should have some leeway to move in.

Prof. Thos. E. Weeks, of Minneapolis, has for some little while past honored our city with his presence. Prof. Littig, of the N. Y. College of Dentistry, where Prof. Weeks has been lecturing, has dubbed him "Professor of Monstrodontia" because of the size of the models he uses in his lectures on "Cavity Preparation."

The following card for a reception held Tuesday evening, February 4, was received last week by the majority of dentists, who are members of the various dental societies in the "Boroughs" and a goodly number crowded the spacious college building on that occasion. Here is the card:

"Your presence is requested at a reception from 8 to 10 P. M. at the New York College, of Dentistry, 205 and 207 East 23d Street, on Tuesday, February 4, 1902. The reception is tendered to Prof. Thomas E. Weeks, D. D. S., of Minneapolis, Minn. At 8:30 Prof. Weeks will give a lecture on "Cavity Preparation," illustrated by original models and by lantern slides. R. S. V. P."

Yours truly,

"THE BOROUGHS."

SIMPLICITY vs. MULTIPLICITY.

Dr. Harlan in his paper at the anniversary of the Society in New York in January, voiced what is to become the topic of the coming days, viz.: a return from multiplicity to simplicity, a basis on which all true knowledge is founded.

Multiplicity leads to confusion. This paper gave us the basis of medicine. The summary of this paper brought out the fact, that we need but a few medicines. While this has been said by others, at various periods, yet there seemed to be a readiness for the reception of what is really a truth in fact.

Life is so much a mystery that as yet we know little of the workings of the human mind. Doubtless, could we have an inside vision of these activities we would find that influences are operating that create an atmosphere for a maturity in a line of thought that has been generating, and we find that there is a readiness for acceptance, which is too often a source of misleading to the one that gets a generous approbation, and then rises up a thought of originality that in some natures will tend to self-emulation, and turns a deaf

ear to any other, that says you are voicing the same thought of others, only on other lines.

A recognition of these facts will do much to facilitate a healthy development of professional progress.

We think there is much evidence that our calling is greatly in need of a definite diversion from the hard beaten tracks that have been so much gone over of late. We are not alone in the expressions that many society gatherings are becoming uninteresting and necessarily unattractive.

A great fault in too many minds is, that we must have something that can be the next day turned into practical account, viz.: the production of a silver dollar. When anything is advanced in a new line, there is a lack of patient waiting for developments which can only exhibit the practical.

Many of us know of the favorite remedies introduced by the late Dr. Atkinson termed "Poly-Crest-Remedies." For any one to say that they were ineffective would be contradictory to known facts. With possibly a slight modification they would challenge a disapproval. In the light of these facts there comes to be a drifting away from things sufficient and simple to an increase of remedies that are food only for the enhancement of commerce.

One or two facts given will substantiate. The value of one simple medicament has come to be almost ignored, viz.: the use of chloride of zinc as remedy for pulp chamber treatment. Although it was forced into larger use by the teachings of the late Dr. Abbott as the "ne plus ultra," it was first suggested by Dr. Atkinson and the formula of aconite and iodine by the late Dr. C. P. Fitch. It may not be amiss to have these things go on record. The facts known of these remedies, tend to show that we drift away from simple things into large varieties.

We have often said that it is marvelous how few medicines we really need in the practice of dentistry. We challenge the disproof of the universal efficacy of chloride of zinc in dealing successfully with pulp canals. We are not ready to admit that anything is needed to take the place of it.

Our thought in saying what we have, is that we may emphasize Dr. Harlan's paper as a prospective introduction of a more profitable line of subjects for discussion before our societies. These views of ours apply in so many directions, we are indulging in much hopefulness for the coming days along the lines of a true progressive development as over against a sad declension along the lines of commercial avarice.

G. ALDEN MILLS,

New York City.

REVIEWS AND ABSTRACTS.

REGIONAL ANATOMY OF THE HEAD AND NECK, for Students and Practitioners of Dentistry. By WILLIAM T. ECKLEY, M. D., Professor of Anatomy in Dental Department, University of Illinois; Professor of Anatomy, College of Physicians and Surgeons, Medical Department, University of Illinois; Professor of Anatomy, Chicago School of Anatomy and Physiology; Professor of Anatomy, Chicago Clinical School; formerly Professor of Anatomy in Northwestern University Dental School, and CORINNE BUFORD ECKLEY, M. D., Demonstrator of Anatomy in Dental Department, University of Illinois; Demonstrator of Anatomy, College of Physicians and Surgeons, Medical Department, University of Illinois; Professor of Anatomy, Chicago School of Anatomy and Physiology; formerly professor of Anatomy in Northwestern University Woman's Medical School. With twenty plates in black and colors and thirty-six illustrations in the text, pp. 230. Price, \$2.50. Philadelphia and New York: Lea Brothers & Co. 1902.

The publication of this book is another mark of the great progress that is being made by dentistry at the present time. That there should have been a demand for such a book shows that the dentist of to-day realizes that to keep up in his profession he must broaden out with it and know more of general medicine and its fundamental branches, and particularly more of the relations between pathological conditions in the general system and the dental area. Nothing can make a better foundation for the study of these relations than the anatomy of the mouth and adjacent structures. The dental and medical professions are closer now than they have ever been and as the work of the dentist broadens, he will be called upon more often by the physician to assist in the diagnosis and treatment of cases involving the dental area directly and indirectly. The book is arranged conveniently for class work, with a list of questions covering the text of each chapter.

This work of Drs. Eckley is one of the most valuable that has come to the dental profession in several years. It covers a distinctly new field. The title is much narrower than the book;

while it does cover the anatomy of the head and neck very thoroughly, it also contains much of surgical anatomy, physiology, embryology and pathology. Probably the most important chapter for the dental practitioner is the one on the fifth nerve, which includes the relations of the fifth to the other cranial nerves, the cervical nerves and the sympathetic system. There are many relations explained so clearly anatomically that it cannot help being of great aid in the diagnosis of the perplexing reflex pains, both to and from the dental region. Attention is called to the following reasons why the fifth nerve should be the reflex storm center: It represents the sensory roots of all the motor cranial nerves from the third to the twelfth, inclusive, hence it responds reflexly to motor nerves of the face, orbit and tongue; its sensory root arises in line with the sensory roots of the cervical nerves, hence radiation of pain from the neck, upper extremity, diaphragm, pleura, pericardium and peritoneum; its facial distribution is favorable for the influences of excessive heat or cold; its distribution to the tongue and temporo-mandibular articulation is one of continuous traumatism and motion; its distribution to the teeth, ear, nose and accessory sinuses of respiration is one of great liability to infection.

The style of the book is very interesting. There is enough of other things intermingled with the anatomy to relieve the work of the dryness characteristic of most works on anatomy. All but a few of the plates and illustrations are copied from the French work of Testut, "*Traite de Anatomie*," and they are excellent.

Besides the anatomical description of the structures of the head and neck, the embryology is given of the structure of the mouth, the sinuses and cells of the face, etc., tracing their development from the visceral clefts and arches, also the explanation of the occurrence of harelip and cleft palate from a lack of complete development. A chapter is devoted to the intramural sinuses, which are rapidly becoming of greater importance to the dentist. Another interesting chapter shows the connections between the blood vessels of the face and mouth and the sinuses of the dura mater, pointing out the routes by which infection may reach the brain in cases of alveolar abscess, facial erysipelas, etc. The etiology and symptoms of paralysis of the fifth and seventh nerves are also considered. There are many points in surgical

anatomy scattered throughout, the operations receiving more particular attention are those for resections of the branches of the fifth nerve, removal of Meckel's and the Gasserian ganglia, harelip and cleft palate, tracheotomy, removal of foreign bodies (as swallowed teeth) from the air passages. These points for the surgeon by the practical anatomist inspire the hope that in subsequent editions of this work other operations may be included, such as the opening and curetting of the antrum of Highmore, the attachments to the bones controlling the direction of the burrowing of pus in alveolar abscess, and fractures and dislocations of the mandible. In the chapters on the muscles of mastication and of the neck, the actions and antagonists of each muscle are given, a material aid in the treatment of fractures and dislocations. The value of these chapters would be considerably increased by the addition of a few paragraphs showing the deformities produced by fractures at various points.

Altogether the book is an exceedingly valuable one to the dentist, and contains very much of interest to the oculist, aurist, rhinologist and laryngologist. In fact, it would not require many additional pages to make it equally valuable to all of these specialists.

ARTHUR D. BLACK.

MEMORANDA.

It is the busy man who always has time to do things.

Dr. J. S. McCurdy, of Fort Wayne, Ind., paid a brief visit to his Chicago friends last month.

Dr. M. L. Hanaford, of Rockford, president of the Illinois State Dental Society, was in Chicago in January.

Dr. W. A. Heckard, of Indianapolis, visited Chicago in January. Dr. Heckard is a man you ought to get acquainted with if you have not already done so.

Dr. James W. Cormany, Mount Carroll, Chairman of the Executive Committee of our State society, visited Chicago in January, looking after society interests. He reports good progress in the program for the coming meeting. Do not forget the State society.

Dr. W. W. Shryock, of Fort Wayne, Ind., was in attendance at the Alumni Clinic of the Chicago College of Dental Surgery in January. If you ever heard of a good clinic in Chicago that Dr. Shryock failed to attend — well, it must have been because Dr. Shryock was ill at the time. We have even known him to attend when he was ill.

SCHOOL OF DENTISTRY—UNIVERSITY OF ILLINOIS.

There will be a clinic at the above school on March 26, 1902. If you have any new ideas send in your name to the clinic committee at the college, corner Harrison and Honore Sts., Chicago.

THE DISTRICT OF COLUMBIA DENTAL SOCIETY.

At the annual meeting of the District of Columbia Dental Society the following officers were elected for 1902: Jno. London, president; Lewelyn F. Davis, vice-president; Wm. D. Monroe, recording secretary; W. S. Donally corresponding secretary; M. F. Finley, treasurer; H. B. Noble, librarian.

THE ODONTOGRAPHIC SOCIETY OF MILWAUKEE.

This vigorous young society held a clinic on February 1, 1902, followed by a dinner and an evening session of papers and discussions. It was a most interesting meeting throughout, there being many present from outside the city. The Milwaukee dentists are noted for their hospitality and their reputation was enhanced on this occasion. When you get an invitation to go to Milwaukee, be sure you accept it.

ANNUAL CLINIC.

The Alumni Association of Northwestern University Dental School will hold their annual clinic Saturday, February 22, 1902, at the college building, corner Madison and Franklin Streets, Chicago.

All members of the profession are invited to attend.

A. V. HARGETT,
President.

G. B. MACFARLANE,
Secretary, 70 State Street.

A NEW NAME.

The *Ohio Dental Journal* is no more. Peace to its ashes—it was burned January 4, 1902. But wait! Do not weep over it. Like a properly constituted phoenix it has risen from its ashes, more lusty than ever, only under another name. It has "outgrown the bounds of a local magazine," and is now called *The Dental Summary*. It has the same publisher and the same editor, and it is still published in Ohio, which is all we need say in the way of endorsement. Condolences on the fire-congratulations on the resurrection. Long may the *Dental Summary* live.

ODONTOGRAPHIC BANQUET.

The banquet given by the Odontographic Society of Chicago, January 20, 1902, was a most enjoyable affair in every way. The officers of this society for 1901 have rounded out a most successful year's work, and have set a mark for others to follow. The coming twelve months give indications of being even more active than any in the previous history of the society. The program

committee are hard at work, and the culmination of the year in the celebration next winter of the fifteenth anniversary of the society by a monster two days' clinic promises to outdo any previous effort of the kind in Chicago.

JANUARY MEETING OF THE ODONTOLOGICAL SOCIETY OF CHICAGO.

The Odontological Society had a most interesting meeting in January. Dr. Elliott R. Carpenter read a paper on "Cocaine," which will appear later in the DENTAL REVIEW. In addition to the regular members the following guests were present and participated in the discussion: Dr. George C. Mathison, of Winnipeg, Manitoba; Drs. F. J. Capon and George Gow, of Toronto, Ontario; Dr. M. F. Cross, of Oshawa, Ontario; Dr. M. A. Mason, of Fort Wayne, Indiana; Dr. F. J. Patterson, Mendota, Ill.; Dr. G. H. Damron, Arcola, Ill.; Dr. D. M. Gallie, Chicago, and the following members of the Madison, Wis. Odontological Society: Drs. C. C. Chittenden, the dean of dentistry in Madison; S. H. Chase and G. C. Kollock.

It was a combination of pleasure and profit to all in attendance.

STOCKHOLM, Jan. 2, 1902.

EDITOR DENTAL REVIEW.

Dear Sir:—I wish to beg for a few lines in your journal for the correction of a rather awkward mistake in the printing of my paper on the symmetrical extraction of the first permanent molars, which appeared in the November issue of the DENTAL REVIEW.

The outline schemes of models and figures which accompanied my paper were, as I told the secretary, intended *only to help the printer in setting up and placing the figures* in their proper order and position, but were *not* to be taken in as part of the article. They can be of no interest whatever to any one else and may tend simply to confuse the reader.

I would be greatly obliged to you if you would kindly make the mistake known in the next issue of the DENTAL REVIEW.

Yours sincerely, ELOF FÖRBERG.

BANQUET TO DR. WILLIAM MITCHELL.

On the evening of February 7, a complimentary banquet was given at the Athletic Club, Chicago, in honor of Dr. William Mitchell, of London, England, Dr. Truman W. Brophy presiding. In view of the warm welcome and the hospitality extended by Dr. Mitchell to so many American dentists during their visit abroad, it afforded them great pleasure to reciprocate in this manner. During the evening and in behalf of the gentlemen present a beautiful gold ring was presented to the guest of the occasion by Dr. C. N. Johnson as a tangible and lasting evidence of their regard and in recognition of his efforts to advance the interests of our profession in England and other foreign countries. Those present besides the guest were as follows: T. W. Brophy, C. N. Johnson, C. S. Case, A. O. Hunt, J. E. Hinkins, J. G. Reid, Elgin MaWhinney, D. M. Cattell, Don M. Gallie, Hart J. Goslee, L. S. Tenney, L. L. Davis, Geo. B. Perry, W. V-B. Ames, Rudolph Beck, J. H. Woolley, Robert Good, G. W. Cook, D. C. Bacon, Geo. J. Dennis.

L. S. T.

ANOTHER BRILLIANT PENMAN.

We are in receipt of a good long letter from our friend, Dr. G. Alden Mills, of New York, commending us for the fling we had at Dr. A. H. Thompson on his handwriting, in the January number—at least we suppose that is what he is doing. Of course he may be swearing at us for all we know, as he was once accused of doing when he wrote a very religious and congratulatory letter to one of his colleagues. If Dr. Thompson ever yields up the palm for original and unique handwriting to any one in the profession, it will assuredly go to Dr. Mills. We should like to see a go-as-you-please match between these two illustrious competitors, with arms lovingly interlocked and a diabolical expression of countenance—if either of these could look that way—in contemplation of the man who had to read their writing, and then see which could really write the worst. If we had the awarding of the prize we should unhesitatingly give it to the one whose letter we had read last. But then “all really great men are poor penmen.”

(It is stated that Horace Greeley was the originator of that quotation.)

AWARD OF THE GROSS PRIZE OF \$1,000.

The Philadelphia Academy of Surgery, as Trustees of the Samuel D. Gross prize for original research in surgery, of one thousand dollars, have awarded this prize, after six years' interval, to Dr. Robert H. M. Dawbarn, of New York City.

The treatise which won the competition was entitled, “The Treatment of Certain Malignant Growths by Excision of both External Carotids.”

Upon this topic Dr. Dawbarn has worked, as opportunity served, for seven years past. The essay, when published, will contain the histories, with pathologist's report in each instance, confirming diagnosis of malignancy and specifying its variety of forty carotid extirpations by the author himself, and as many additional by about a dozen other surgeons. At least two of these are members of the Philadelphia Academy of Surgery.

By the terms of Dr. Gross' bequest, the prize essay must be published in book form, and a copy thereof be deposited in the Samuel D. Gross Library, of the Philadelphia Academy of Surgery.

[The DENTAL REVIEW extends congratulations to Dr. Dawbarn on his splendid achievement. His work is well known to the readers of dental literature because of his close affiliation with the members of our profession and his active interest in dental society matters. We beg to share some of the pride which the medical profession must have in him.]

THE DENTAL CORPS OF THE ARMY.

In a letter from Dr. John S. Marshall, president of the Dental Examining Board, dated January 30, 1902, we note the following items of news connected with the dental corps:

“Dr. John Archibald McAlister, of Fort Wayne, Ind., passed the examinations for employment as Contract Dental Surgeon, U. S. A., on January 18, 1902. He signed his contract yesterday and has received orders to report for

duty to the commanding officer of the Department of the Philippines, Manilla, P. I. This appointment leaves but one vacancy in the corps. Another vacancy, however, will soon be created by the retirement of Dr. Robt. W. Morgan, member of the Examining Board of Dental Surgeons, on account of illness.

"You may be interested to know that the Surgeon General has provided each member of the dental corps with three dental journals every month. There will, therefore, be no excuse for the army dental surgeon falling behind his brother in civil practice. The Surgeon General is also liberal in the matter of furnishing *new books* upon dental surgery and subjects allied therewith. I trust that when the new Surgeon General is selected next June we, as a profession, will be as fortunate as we have been in General Sternberg, for he has given the dental corps every facility for its work, and in this he has been supported by the Secretary of War, Mr. Root. Our dental surgeons are as well equipped for service—with instruments, books and magazines—as the great majority of civil practitioners. The contracts for the purchase of these supplies had to be approved by the Secretary of War, and if he had been so inclined he could have cut down our invoices and made it much harder for us to render efficient service. This he did not do, but, on the other hand, gave his hearty approval to all that we asked for.

"Yours very truly, JOHN S. MARSHALL."

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

- 688,501. Artificial tooth, Robert Brewster, Chicago, Ill.
- 688,661. Porcelain tooth crown, Wm. B. Miller, Altoona, Pa.
- 688,440. Tool for manufacturing tooth crowns, Wm. P. Scott, Chicago, Ill.
- 688,553. Instrument for filling dental cavities with cement, Ivar E. Sigveland, St. Paul, Minn.
- 35,411. Design, toothbrush holder, Hugh J. Knowlton and F. H. Cheever, New Haven, Conn.
- 689,158. Fastening for artificial teeth, August Bischoff, Philadelphia, Pa.
- 11,956. Reissue, dental tool, Carl H. Seeger and N. Dedrick, Manitowoc Wis.
- 689,589. Dentist's cabinet, Wm. G. Hullhorst, Toledo, Ohio.
- 689,596. Dental tool, Samuel W. Platt, Park City, Utah.
- 690,224. Hot air dental appliance, Henry C. Bagby, Santa Clara, Cal.
- 689,964. Barber's chair, Charles W. Hieber, Canton, Ohio.
- 690,085. Apparatus for forming seamless tooth crowns, Joseph F. Twist, San Francisco, Cal.
- 689,937. Combined flexible conductor and resistance cord, Ernest E. Werner, assignor to Garhart Dental Manufacturing Co., Indianapolis, Ind.
- 689,940. Dental finger guard, Gilbert M. Williams, Maysville, Ky.
- 690,737. Top for tooth powder bottles, Henry B. Kent, New Brunswick, N. J.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

THE NAVY DENTAL BILL.

It is to be hoped that every dentist will lend his aid toward the passage of the following bill, which has been introduced at Washington :

"57TH CONGRESS,
1ST SESSION. S. 2519.

IN THE SENATE OF THE UNITED STATES.

JANUARY 8, 1902.

MR. PETTUS introduced the following bill, which was read twice and referred to the Committee on Naval Affairs.

A BILL

To add dental surgeons to the Medical Corps of the Navy.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That to the Medical Corps of the Navy there shall be attached a corps of dental surgeons to serve the officers, enlisted men and boys in the naval military service and training schools, which corps shall not exceed in number the proportion of one to one thousand authorized by law for said service and schools.

The said dental corps shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, and with respect to rank, pay, and allowances and to promotion within said dental corps the grades named shall correspond to the grades of the medical corps designated assistant surgeon, passed assistant surgeon and surgeon, respectively.

SEC. 2. That original appointments shall be made to the grade of assistant dental surgeon, and the appointees must be citizens of the United States, between twenty-three and thirty-three years of age, graduates of standard dental colleges with not less than two years' subsequent experience in practice, of good moral character, of unquestionable professional repute, and shall be required to pass a satisfactory physical and professional examination : *Provided*, That there shall first be selected a member of the dental profession who is a graduate of a standard dental college and whose aptitude and experience evidence eminent fitness for conducting the professional examinations herein provided for, and for otherwise assisting in organizing, equipping, and supervising the operations of the corps, who shall be first appointed to the grade of dental surgeon."

THE PRESENT STATUS OF THE WISCONSIN CASE.

In our January issue we published a syllabus of the recent decision in Wisconsin touching the State Board of Dental Examiners and the Dental Department of the Wisconsin College of Physicians and Surgeons, in which the Board won the case. The following report of a recent meeting of the Board and the correspondence connected therewith will indicate the present status of affairs, and we hasten to congratulate both the Board and the college on the final understanding to which they have arrived.

Milwaukee, Wis., Jan. 30, 1902.

A special meeting of the State Board of Dental Examiners of the State of Wisconsin, held pursuant to call of the President, at the Hotel Pfister, in the city of Milwaukee.

All members of the board present.

Dr. H. L. Banzhaf presented the following resolution, which was unanimously adopted:

"WHEREAS: After several years of controversy and litigation, the right of the State Board of Dental Examiners of Wisconsin to establish, proceeding reasonably, the standards of reputability for dental schools within this State has been fully established by our Supreme Court, and that candidates for licenses to practice the profession of dentistry within the State must submit to the judgment of the board, so long as such judgment is within the boundaries of reason and common sense; and

WHEREAS: The rules and standing resolutions of the National Association of Dental Faculties, together with those of the National Association of Dental Examiners, contain the consensus of opinions from the best minds of the profession throughout the land in this regard; and

WHEREAS: The judgment of the State Board of Dental Examiners of Wisconsin is in accord with that of the two great national bodies referred to, as expressed in such rules and resolutions; therefore,

Resolved, That the rules and standing resolutions above referred to, as published in the reports and the proceedings of said bodies for 1901, are hereby adopted as the rules and regulations of this board as to dental colleges, so far as the same may properly be made applicable to schools in this State; and

Resolved, further, That this board will, as of course, on application, recognize the diplomas and license, without examination, of graduates of any dental college within this State, when it shall be made to appear to the satisfaction of the board that such college has fully and fairly complied with such rules and regulations for a reasonable length of time prior to such application; provided, that such college and its management shall also be made to appear to the satisfaction of the board to be, in all respects, worthy of repute or distinction, honorable, praiseworthy; that is to say, reputable."

On motion of Dr. Wentworth, Dr. C. C. Chittenden, president of the board, was authorized and requested to inform the president of the Wisconsin College of Physicians and Surgeons of the details of the objections found by the board to the management and condition of the dental department of that school, at the time of the visit and examination by the board, made on the 29th inst., and the president was also authorized and directed to communicate to the president of said school the decision of the board to recommend the Wisconsin College of Physicians and Surgeons, Dental Department, for membership in the National Association of Dental Faculties and to recognize the diplomas from such school, without examination, whenever the board should become satisfied that said school had made the corrections and changes suggested by the board, and had, for a reasonable length of time, lived up to, and fully complied with, the rules and regulations of the board.

as indicated in the resolution this day adopted, which motion was seconded and unanimously adopted.

The president presented to the board the following letter and memorandum, indicating his purpose to transmit the same to the president of said Wisconsin College of Physicians and Surgeons, pursuant to the authority conferred upon him, and the same were read to the board, and on motion, unanimously approved:

"Milwaukee, Jan. 30, 1902.

"A. H. Levings, M. D., President Wisconsin College of Physicians and Surgeons, Milwaukee, Wis.

"Dear Sir:—Pursuant to the interview of yesterday between our board and the members of the faculty of the dental department of your school, I have the honor to state that, at a meeting of the board held this day, I was authorized to transmit to you a memorandum of various matters in the management and condition of your dental department, which, in the judgment of the board, should be changed or corrected.

"I also transmit herewith a copy of a resolution adopted by the board.

"I am further authorized to assure you that, when the dental department of the Wisconsin College of Physicians and Surgeons shall have made these changes and corrections, and shall have, for a reasonable length of time, lived up to, and fully complied with, the rules and regulations of the board, as indicated in the accompanying resolution, this board will take pleasure in recommending your school to the National Association of Dental Faculties for membership and in recognizing your graduates, holding proper diplomas from your school, as entitled to be licensed to practice dentistry in this State, without examination.

"It is the understanding of the board that the recommendation referred to will be made at the next annual meeting of the National Faculties Association, if the conditions above referred to shall have been fully complied with by the Wisconsin College of Physicians and Surgeons, Dental Department.

"Respectfully yours,

(Signed.)

"CHARLES C. CHITTENDEN, President."

"Memorandum for Wisconsin College of Physicians and Surgeons, Dental Department.

"1. Dental school should be managed by a suitable and competent dean, who shall devote all the time necessary to the proper performance of his duties.

"2. Rules of this board in relation to admission of students must be strictly complied with.

"3. Salaries of instructors should be adequate to secure and assure proper and efficient service.

"4. No students should be received on any terms other than those stated in the catalogue.

"5. The operatory, in all its interests, should be conducted along strictly ethical lines.

"6. Provisions should be made at once for more room and equipment in the infirmary and prosthetic laboratories.

"7. Improvement in operative and prosthetic technics seems to be needed. To this end, identification with the National Association of Pedagogics is recommended.

"8. Too much consolidation of dental with medical classes is deprecated.

"9. Clinics by experts in the various approved methods in operative dentistry should be made a regular feature in the conduct of the infirmary. The confining of such instructions to narrow limits is disadvantageous to the student.

"10. A strict compliance with the rules and regulations adopted by the board, will, of course, be expected.

"A copy of a resolution this day adopted by us is handed you herewith for your information.

"11. A careful revision and rearrangement of the curriculum is recommended, to the end that all the important parts of each branch of study may be covered without omission, confusion or repetition, so that the student's time may be utilized to the best advantage.

"12. Proper records should be kept of the attendance, markings and standing of each student; also, of all examinations."

The following letter explains itself:

Milwaukee, Wis., Feb. 3, 1902.

C. C. Chittenden, D. D. S., President Wisconsin State Board of Dental Examiners.

Dear Sir:—I have the honor to acknowledge the receipt of your letter of Jan. 30, enclosing a resolution adopted by the Board as well as a memorandum of various matters relating to the Dental Department of the Wisconsin College of Physicians and Surgeons.

I desire to state that I have carefully considered the resolution as adopted, in which it is stated that the Board has the right to establish standards of reputability for dental schools when proceeding within the boundaries of reason and common sense; also that it has adopted the rules and standing resolutions of the National Association of Dental Faculties together with those of the National Association of Dental Examiners, and further that the Board will, after a reasonable time, and in accordance with the above standards, license, without examination, graduates of any dental college within this State when it shall be made to appear to the satisfaction of the Board that such college is reputable. With the above resolution we are in complete accord, and will be found at all times supporting not only the letter but the spirit of the same.

I wish also to state that in the memorandum which you have trans-

mitted for our guidance we find nothing that does not meet with our approval and which will not receive our immediate consideration.

In conclusion allow me to say that being now apparently in perfect accord with the Board it will be our aim and desire in the future to give said Board our hearty and undivided support.

Most respectfully yours,

A. W. LEVINGS, President.

OBITUARY.

THOMAS W. BECKWITH, D. D. S.

Died at Tucson, Arizona, whither he had gone for his health, January 14, 1902, from tuberculosis of stomach and bowels, in his forty-sixth year.

Dr. Beckwith began the study of dentistry with Dr. E. J. Perry and Dr. O. H. Smith, in Sycamore, Ill., and graduated from the Dental Department of the University of Michigan in 1880. He began practice in Sterling, Ill., in 1884. Dr. Beckwith married Miss Hattie Tracy, of Sterling, and at his death was a widower. Three children survive their parents. Dr. Beckwith was high in Masonic honors, a Knight Templar, and at the time of his death was past commander and high priest. He was a member of the Illinois State Dental Society, and for a number of years secretary of the Northern Illinois Dental Society. He was highly esteemed by the community. He was of a quiet, and retiring disposition. He was a real gentleman, a high minded, brave and patient man. Professionally he was a capable, gentle, clean, conscientious dentist, and his patients loved him; his practice was large, and the community will miss his ministrations. He was a religious man, and died with the comforts of the Christian's hope.

E. J. PERRY.

Just as we go to press we receive the following intelligence:

Dr. Heber B. Barber, of Naperville, Illinois, age 33, died at Colorado Springs, February 5, after an illness of nearly one year. He was a graduate of the Chicago College of Dental Surgery, class of '89.

THE

DENTAL REVIEW.

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No. 3

ORIGINAL COMMUNICATIONS.

INFLUENCE OF SEXUALITY IN THE DEVELOPMENT OF THE TEETH.*

BY T. ELHANAN POWELL, D. D. S., CHICAGO, ILL.

In the study of Comparative Anatomy one is wonderfully impressed with the apparently close relation existing between the development of the teeth with that of the sexual instinct. Throughout all nature the male of almost every species has some special organ which makes it more formidable in battle than the female, or else is endowed with some feature of beauty which enables it to compete with the other males for the favor of the females. Darwin, in his "Origin of Species," tells us of the battles between alligators for the possession of the females, how they bellow and whirl around, while fighting. We have also been told how the males of certain hymenopterous insects have been seen to fight for a particular female, who sits by, a nonpartisan beholder, and allows herself to be escorted away by the victor.

It is interesting to read the stories of the antics of some male birds in the presence of the females. They will sing for hours at a time and go through various movements to gain the admiration of the females. One reputable writer tells us how a pied peacock carried the favors of nearly all the hen birds on his place.

It is a pleasure to observe the peaceful rivalry between the males of the feathered tribe, which usually prevails, but we frequently witness vicious combats among them, as illustrated by cock fights, fights between sparrows, etc.

Battle is the prevailing method for winning the favor of the female among most of the mammals, and those not endowed with

*Read before the Odontographic Society of Chicago.

horns are almost invariably possessed of enormously developed tusks, which are used for offense and defense, even those animals which we look upon as not being in the least obstreperous engage in desperate conflict during the season of love; male hares, moles and squirrels, which are not ordinarily pugnacious, wound each other severely at such seasons. Richardson tells us of the skeletons of stags having been found with horns tightly locked together.

The males of the carnivora are not endowed with special fighting tools on account of the extreme specialization of the teeth. The felidae, the canidae, and ursidae are all specially endowed with formidable teeth and claws which are used both to procure food for themselves and for weapons of offense and defense.

In the male norwhal the left incisor appears to be the sexual weapon, as it grows in length sometimes nine and ten feet, and is entirely absent in the female. Darwin tells us that "with many animals the canine teeth in the upper or lower jaw, or in both, are much larger in the males than in the females, or are absent entirely in the latter, with the exception sometimes of a hidden rudiment. Certain antelope, the musk deer, camel, horse, boar, various apes, seals and the walrus offer instances."

The ornithorynchus, a species of mole, belonging to the lowest order of mammalia, has a curious feature, consisting of a spur on the foreleg, resembling somewhat the poison fang of a serpent, but not having a poisonous secretion, and on the leg of the female there is a hollow into which the spur of the male appears to fit.

The marsupialia is a low order of mammalia, depending on swiftness of flight for protection, and the young are carried in the marsupial pouch in front of the abdomen. Thus the mother protects her young. There appears to be no special development of the teeth on account of sex in this order, as they are utterly devoid of canines, except in the American opossum, the dasyure and wombat of Australia. The dasyure have well developed canines, and are much more fierce in combat than any of the rest of the marsupials.

The prominent exceptions to excessive canine development among the mammalia is the norwhal, already mentioned, the kangaroo, the beaver and the elephant; all these have an unusual development of the central incisors. These teeth in the norwhal and the elephant appear to be caninical, but are developed from the intermaxillary bones, and are consequently true incisors. In the beaver, which appears to be the most highly intellectual of all the lower animals,

the incisors are specially adapted to cutting down trees, which they use in building their houses. I might mention, in passing, that the beaver is the original pioneer. House building with him is a regular vocation born of the necessity for continual gnawing. His teeth grow from persistent pulps, and were he to cease gnawing his life would pay the forfeit, as the teeth through disuse would curve around so as to prevent the animal from obtaining food, and he would soon starve to death.

The lower incisors of the kangaroo are shaped like a pair of shears, and are used for shearing grass on which they feed. The two halves of the lower jaw are separate and movable horizontally, one incisor in each jaw. In the order of the ruminants the canines are nearly always absent wherever horns are present. The upper incisors are also usually absent in this order when the horns are present, or vice versa. And there is always greater development of the horns of the stag than of the female.

The wild boar is an excellent example of the influence of the sexual organs on the teeth. There is no male animal which has a greater opportunity to indulge the sexual nature than the wild pig, and the tusks become enormously developed. This same species shows none of this unusual development when castration has taken place early and the canines of the female are of ordinary size.

The canines of the horse are larger in the male than in the female unless castration is performed early, and not only are the canines larger, but there is an enormous development of the neck and mane. The unusual neck development is also noticed in the male of *bos taurus*, or common cow. The rhinoceros has no canines, but has six incisors, and they bear an inverse relationship to the absence or presence of horns.

In the higher order of mammalia, including all of the primates, we begin to notice the influence of intellect on specially organized features, as the scale of intellect is ascended less and less use is found for organs which serve the purpose of battle in the lower orders. The development of the canines are in inverse relationship to the orthognathism. The lemurs have almost a horizontal facial angle, and next to the lemurs is the old world baboon. Then the new world monkey, which has a facial angle of 45 degrees with a very small caninical development.

Man has a facial angle of above 75 degrees, and the difference in the development of the canines between the sexes is nil. Endowed

with the intelligence to utilize nature, and art, with all the culture of civilization to assist him, nature has avoided any unnecessary work on the canines, but has left on the face of the sensual her unmistakable mark, i. e., a coarse and heavy development of the lower face at the expense of the intellectual faculties.

With all the intellect of man, I doubt if it can be proven that he possesses superior moral fiber to many of the lower animals. It is true that nearly all the male mammals fight for the favor of the females, yet there is a chastity, and a discretion exercised far beyond the practice of any civilized race.

From the lemur to civilized man there is a gradual reduction of the prognathism and a corresponding development of that portion of the nervous tissue contained in the cranial cavity. Man's nervous system is the nervous system par excellence, but this nervous development is at the expense of the physical, and when carried to the extremes of luxurious civilization the moral also becomes perverted. The Indian with all of his savagery and ferociousness of nature is more moral as to his sexual nature than the most civilized nations of Europe. The explanation for this lies in the difference in the amount of effort necessary to sustain life. The savage's life is a strenuous one, and he is compelled to use all the physical effort he is capable of to wring from nature that which means life to him. On the other hand, wealth with all of its enervating influences, saps the physical and moral life of modern Europe, and is beginning to claim its victims in America.

The typical mammalian formula is forty-four teeth, while civilized man has but thirty-two. We sometimes notice a reversion to the original type in the form of supernumeraries which we look upon as abnormalities. In the lower tribes found in Australia, and in Africa, it is not at all unusual for fourth molars to be found in place. Their teeth are much larger than those of civilized man, and much better formed. The third and fourth molars are as large or larger than the first and second. They have a decided prognathism, and the head is small, with thick, dense, cranial bones. The cuspid teeth are large and prominent, which is more noticeable in the males than it is in the females. The sexual nature of lower forms of man is very strong, the difference consisting in the rareness of sterility and the universally strong and healthy offspring. Where food can be readily obtained, the death rate among the children is very low,

uterine troubles are practically unknown and child-birth merely an incident.

In civilized man the highly developed nervous system leads to moral perversion of every description, some of them too disgusting to be allowed a moment's resting place in the mind, and among women, diseases of the procreative organs is so universal that to find a perfectly well woman is something remarkable.

All nature gives evidence of a close relationship between the sexual nature and the teeth, and when the sexual nature ceases to influence the development of the teeth, retrogression and degeneration, both moral and physical, have set in. To quote Darwin: "If we look back to an extremely remote epoch, before man had arrived at the dignity of manhood, had he been guided more by instinct and less by reason than are the lowest savages of the present time, our earliest ancestors would not have practiced infanticide or polyandry; for the instincts of the lower animals are never so perverted as to lead them regularly to destroy their own offspring, nor put a check on the increase of population by the practice of licentiousness."

Why the sexual nature influences the development of the teeth is a problem which has never as yet been answered. No one has been able to explain why a stag never renews his horns after castration, but it is evidenced by many naturalists that he does not. The stag of the reindeer seems to be an exception, it being claimed that the horns of the reindeer are not sexually affected. There must be a close relationship through the sympathetic nerves. The sympathetic nerve is composed of a series of ganglia forming two cords, one on each side of the spine, connecting the ganglion of Ribes on the anterior cerebral communicating artery with the ganglion impar situated in front of the coccyx. The gasserian ganglion on the root of the fifth pair of nerves affects pretty much all the frontal portion of the head, and by pressing the finger on the ganglion impar in front of the coccyx, sympathetic sensations can be distributed directly to the superior maxillary and to the teeth. I have heard that irritation of the clitoris affects the incisors and cuspids of the lower jaw. Although the ganglia of Ribes is difficult of access, in some cases, pressure put over the ganglion will send sensations down the entire length of the spine. These ganglia communicating with the cerebro-spinal nerves make a network of possible influence beyond the province of the novice to trace.

PORCELAIN INLAYS.*

BY HUGO FRANZ, D. D. S., CHICAGO, ILL.

Members of the Odontographic Society: In entering with you to-night upon a field of discussion which of late has engaged almost every dental society in the world, to perhaps, its very limit of endurance, I do not expect to offer any specifically new thoughts, but I feel that, in spite of all the arguments which the profession has already indulged in regarding porcelain inlay work, those of us, whose interest has been profoundly stirred, cannot keep hot enough upon this recently rediscovered trail. If I speak of a rediscovered trail, I mean by this the idea of inlay work. It is not a new idea; in its origin it goes back twenty years and more. At intervals, the attention of the profession has been drawn to it more or less forcibly, but, on the whole, up to a couple of years ago, its followers have been sporadic. With recent improvements in materials and the introduction of suitable furnaces, a great change has taken place. It is not only the profession now which is generally interested in the questions pro and con; it is the layman who, in many instances, stirs up the dry bones of operators by inquiries and questions. From the standpoint of the operator, I feel as if just at the present time we could not have enough exchange of views on the subject, while we may profit by such proceedings and bring to an early development capacities, inventive as well as operative, which may be slumbering until aroused by the bugle call of demand.

Now, in the first place, no matter what our several expectations in this line of work may be, whether optimistic or pessimistic, one thing is undeniable: There is a clamoring call and urgent demand among the laity for some substitute for gold in the filling or restoration of various teeth which are so located in the mouth that they every now and then are exposed to the view of the observing and scrutinizing eye of people who are in conversation with us, or into whose company we are thrown.

Taking this much as unalterably granted, let me say a few words regarding the always reciprocal development of operator and manufacturer in the field of dentistry. Present conditions differ greatly from those of years ago. Our dental patriarchs in most instances were their own makers of implements and materials necessary for the skilful execution of their art. How different to-day! Though

*Read before the Odontographic Society of Chicago.

many a new idea may have its origin in the brain of the operating dentist, there are few cases in which the practical working out of his ideas is not left to the special manufacturer of dental supplies, and, as a matter of course, the latter is always keenly alert to the demands of the operator.

I know there are many complaints on the part of the profession in regard to the smooth working of these most desirable reciprocities upon the dental field of toil; yet in many cases I believe our grievances to be imaginary, or, at least, we too easily lose sight of the fact that we ourselves are responsible in the first degree for many a laxity and disinterestedness charged against our manufacturers and supply firms. Whatever may have happened in connection with other articles, in case of the porcelain movement, we can well-nigh be satisfied with the interest shown by our manufacturers in experimenting upon their own impulse with the different materials in the sole endeavor of aiding the dentist in his work at the chair and in the laboratory. There are certainly many things to be wished for yet. Think for a moment of the difference in the light-breaking properties of our porcelain bodies, and enamels, as compared with that of the corresponding dental tissues. Think of the shortcomings in colors and of the many undesirable working qualities of one kind or the other in the different makes of materials for porcelain inlay work, which are trying and vexing to the faithful and scrupulous operator. These shortcomings are not the fault of disinterested or indifferent manufacturers; they simply belong to the as yet insurmountable difficulties encountered in the materials in hand. To offset this, let it be remembered that the making of porcelain bodies and enamels for inlay work is of recent date. Development in this line, to my mind, is in a very embryonic state. And here I ask you, ask the younger members of the profession to answer this question duly: To whose task does it primarily fall to keep this once started pendulum swinging? It is the dentist, the man at the operating chair, with whose earnest endeavor, and sincere enthusiasm this matter of porcelain inlay work will stand or fall. We of the younger blood and sinew will, by our integrity and by a persistent determination not to shirk any of the responsibilities of the issue, have to decide the future of this child born anew unto us. I am not afraid of the manufacturer. It is, after all, his bread and butter to cater to our demands, just as true as it is that we ourselves, in accordance with our professional duty of benefactors to mankind by

eliminating bodily defects, inherited or acquired, ought to be awake to the idea that we should not drop the sledge as long as there is yet a bolt to be riveted, to make this house of our own creation still loftier, still more efficient to carry on in it the business of combating the ravages of wear and tear in that most beautiful creation of Nature's forces—the human form.

I am not standing here to-night to enter to any great extent upon a systematically laid out plan of telling you how to go to work at porcelain inlays. Others before me have done that more ably than I can. The desire is to arouse sleeping talent so as to help us on to accomplishments in our professional work which by their products are destined to create happiness in suffering humanity. If advancing modern culture and civilization want to redeem themselves for the many sacrifices they ruthlessly demand from their recipients, it is the task of scientific and manual development to remedy the defects made by modern life and do it in such a way that an observer will not be conscious of our patchwork. There may be a few of our clients who are proud of their gold fillings and gold-shell crowns, but this is an error in taste, and gold restorations of dental organs will ever remain a shock to the artistic and esthetic eye of the real lover of the natural and beautiful. It is nature which teaches us harmony and beauty, and her suggestions ought to be our only guide in the restorative work upon the teeth. Whenever I see a row of teeth with defects carefully patched up with gold, it reminds me of the little images of Chinese gods which are always executed with phenomenal skill; yet it takes a desperate and ever fatal stretching of conscience to proclaim these creations of human imagination and skill to be artistic, and harmonious, and therefore as possessing any claim whatever to be esthetic.

Now, it may be, that by the above exposition I have started up increased pulsation in the professional veins of some who have not given this matter of porcelain inlay work the due consideration it deserves. It takes ceaseless knocking to keep the greater number of us laboring faithfully, scrupulously and without lapse at the grindstone of our several callings, no matter how much of our own free choice they originally may have been. For the benefit of those who are willing to take up the broom and sweep cobwebs, a few practical hints may be added advantageously.

To the beginner, or those who have met with failure and discouragement, nothing better could be recommended than to make a care-

ful study of the three papers which were read in January of this year at an inlay symposium of the Chicago Dental Society. They were published in the March number of the DENTAL REVIEW. The practical hints given in these papers by their essayists, Reeves, Thompson and Taggart, are at once concise and well borne out by the best experts in porcelain inlay work. The *Dental Cosmos*, in 1901, also has published several good articles bearing on the subject. They are well worth reading. My own endeavor in the rest of this paper will be to touch upon points which, to my mind, need special emphasis.

Firstly, whatever you decide to do in this line of work, take your refuge in the dummy to acquire the necessary manipulative dexterity. There scrupulously study the working qualities of the different materials which are used in making a matrix. It is absolutely necessary that you in this way first acquaint yourselves with the behavior of the gold and platinum foil in the different cavities. It will save you and your patients an endless amount of vexation and perplexity, which otherwise very easily will lead to an utter discouragement of the patient, as well as the operator, and may be an incentive to abandon inlay work at the very start. I feel as if I cannot be too emphatic in advising this step. Think of the long and systematic training you received in the manipulation of gold foil. It is true, your hand is more generally skilled now; but the nature of inlay work is so entirely different from any other kind of operation which you have been called to perform up to this time, that it is not best to trust your hand with this work in the mouth of a patient from the very outset. Bend for a few weeks over your laboratory bench and the dummy, and your future work at the chair will be a satisfaction and a great source of delight to yourselves and your patients. If you thus have conquered the difficulties of the technique, you do not have to worry half as much as in the performance of many other operations pertaining to dentistry. Of one thing be especially assured. As soon as the patient has made up his or her mind that porcelain inlays are worth their while, they will give you all the practical and moral support you possibly can wish for. With the aid of a well understood technique, the operative part of the work can in most cases be performed with much less inconvenience to the patient than is the case when gold is used. Indeed, to all of us who are acquainted with the scope of this work, the filling with gold of cervical cavities on the labial and buccal surfaces of the incisors, cuspids and bicuspid, displays a lack of efficiency on the part of the

operator which, at the present time, seems almost unpardonable. If it were merely to fill *these* cavities that porcelain could be used to any advantage, there would be enough of an impetus to cause every dentist to equip himself with the necessary knowledge and appliances to take care of his patient in this proper way.

I want to enter here a strong plea for the unfortunate sufferer with the above mentioned abrasion of dental tissues, i. e., in cases of cervical cavities of the labial and buccal surfaces of the ten anterior teeth in the upper and lower jaw. It is not necessary to picture to you what, in a great many instances, it means to the patient as well as to the operator to fill these cavities with gold. There are some gold enthusiasts who make light of these cavities, who never have to make an undercut, with whom parallel walls will retain the filling at any stage. I dare challenge them with the following assertion: There may be a few fortunate ones among us who have skilful assistants who enable them to readily insert gold into these cavities without the necessity of more or less decided undercuts. Those operators are extremely lucky indeed, and I advise them to hold on to their assistants most tenaciously. But few, very few, are fortunate enough to have skill and competency thus placed at their very elbow. Yet even at the best their patients will leave the chair with a horrible fear of any more cavities of the same nature. Even if the gums have been forced up to the desired height by the use of cocaine, and the pain of the polishing disk has been eliminated by the same means, they have seen the operator sweating and laboring uncomfortably; and after the effect of the anesthetic agent has ceased, the front part of their dental arch will feel as if the big driving wheels of one of our famous locomotives had chosen to take their thundering way across it.

On the other hand, provided you master the technique, inlays for these cavities are a revelation to the patient. I do not care how far under the gums the decay may have advanced, after a superficial uretting of the cavity, you will be able to press the gums away and out of the cavity by the use of gutta-percha or cotton saturated with sandarac varnish. After retaining this prop for twenty-four to forty-eight hours, the field of operation is clear, and, what concerns the patient mostly, the surrounding soft tissues are in a most tolerant mood. Rubber dam is not necessary. Of course its use is not always necessary, nor even desirable for the manipulation of gold. But even then it requires the application of very uncomfortable

methods to keep the gums dry long enough and at a respectable distance from the field of operation. None of this needs to be done and provided for in case of inlay work. In the preparation of the cavity also we can spare the "finer feelings" of our patients easier and with less exertion. The handling of the matrix in these cavities is least exacting and the inserting of the finished inlay most readily accomplished. If you have been painstaking in preparing your matrix and have executed your laboratory work well, you will not have to touch the polishing stone or disk. If the patient has not watched your hands very closely, the filling will be in place without his having any appreciable knowledge of it. His appreciation of your work will come after all is done, and not while it is *being* done. Of course, as in all inlay work, our most frequent shortcomings and consequently greatest difficulties are found and encountered in the accomplishment of the proper color effects. Experience in this part of the work can only be acquired by operations directly in the mouths of patients. But, as I have said before, it will surprise you how kindly your patients will take to these services, and how willingly they will give moral support to your earnest endeavors, even though you may fail to get *ideal* results in *every* case.

Ideal results? How often have you yourself had them in filling these cervical cavities with gold, or how often have you found others accomplish them? To the beginner I would say, let these very cavities be your starting-point on the road to adopting porcelain work for the proper places. You will not, you cannot, be disappointed. But remember the preparatory training on the dummy.

Another kind of cavities for which porcelain inlays are most advisable, not only from the artistic, but most seriously from the practical standpoint, are large cavities in devitalized teeth, in which the use of gold is very often undesirable, on account of the frailty of the hard tissues, as well as the irritability of the peridental membrane. This is another case where the beginner will find much encouragement. It will gradually imbue him with the possibility of the work, and he will safely step into the footprints of porcelain inlay advocates. In conjunction with them he will gradually define its real possibilities by lining out its proper limits regarding which we are yet in the dark. To establish these, it will take the experience of the multitude and not that of a few individuals. In this conviction, let every one of us be urged to do his little mite in establishing the proper place for porcelain inlay work.

In one class of patients you will be especially successful with inlays, i. e., in the extremely nervous, easily frightened and readily overtaxed patient. For these persons I have comfortably placed even difficult inlays for compound cavities which I had previously tried to fill with gold, but did not succeed because the patient would not submit to the pain of undercutting, nor to the annoyance of malleting.

A great deal has been said about the shrinkage of porcelain and the consequent evil results of warping of thin fillings, or the drawing out of shape of matrices. You read statements to the effect that the different materials shrink from thirty to fifty per cent. This looks very discouraging, indeed, especially when at the same time the impression is inferred that this shrinkage is certain to interfere with the final shape of the filling. For this reason it has been proclaimed that perfectly fitting inlays could never be made for those peculiar cervical cavities on the buccal and labial aspects of cuspids and bicuspid which with little depth stretch as a narrow band in close proximity to the gums over these curved surfaces. Let me state here that this is a bugbear of the imagination. The said shrinkage of from thirty to fifty per cent occurs while the porcelain is on its way to change from an amorphous powder to a plastic mass in the process of fusing. During this time the material is in a most sensitive condition to yield to the slightest forces of tension which it may be subjected to. In the process of fusing, the loosely collected grains of the powder are drawn together into infinitely closer molecular union, and this, of course, after the laws of physics, cannot take place without loss of volume. The low and high fusing material differ slightly in their behavior while fusing, and I therefore prefer to take them separately in the following exposition:

The low fusing bodies have but a very slight or practically no affinity to the gold or platinum surfaces of the matrix while fusing, and forsake them entirely to follow their inherent molecular affinities, so that you will find after the first baking that the baked piece of porcelain has tacked itself only to a very small surface of the matrix, leaving the rest of the matrix entirely disengaged. It is necessary, then, to repeatedly flow some more powder into the crevices between the porcelain and matrix, until you have enough porcelain built onto the original piece to fill out the whole concavity. In these low fusing bodies it is very easily perceived that the fusing mass

does not in any way interfere with the matrix because of its very slight affinity to the metallic surfaces.

In the high fusing bodies the picture is somewhat different. You will find that the fusing mass is not so unanimously yielding to its molecular affinities only as is the case in the low fusing materials. Already, at the earliest stage of the process of fusing, the particles near the platinum walls display a tendency to stay with them, while in the larger central portions of the material, the affinities of its own molecules will overbalance and cause the center to separate from that small belt of peripheral particles which are attracted by the surface of the platinum, thus producing cracks within the body of the material which have to be filled afterward.

The principal point of emphasis is that this cracking of the material occurs in the process of gradual fusing when the forces of tension in the substance are very low indeed, and not sufficiently strong to alter the shape of the recipient matrix in any way.

A great many operators are in the habit of cutting grooves in the porcelain material before fusing, with the idea of preventing warping. I do the same; but I do not do it so much because I am afraid that the shrinkage spoken of before, will interfere with the shape of the matrix, but because I find that it is easier to fill these purposely cut grooves than the crevices which are formed with the material having its own way. In the latter case cracks occur near the wall of the matrix and are very ragged and irregular. It is very hard to fill these thoroughly, so that your filling will be dense just in parts where it is required mostly, i. e., on the surface. If you, in working over larger inlays, cut grooves in shape of a cross, in the material, before baking, you will find that the four pieces of porcelain consequently formed will engage the walls of the matrix from the start much closer, and you will have less trouble in regard to good final margins; and, to my mind, also the danger of bubbling is somewhat eliminated, although the principal cause for the latter phenomenon is overbaking.

Regarding the shrinkage in cooling, it is my opinion that it plays too insignificant a part to interfere with the fit of the ordinary inlay unless in a very small measure it be responsible for the rocking of inlays for compound cavities in molars and bicuspid in cases where the proximal and occlusal part of the inlay form a decided angle. as it always will be, when the pulps of these teeth are not devitalized. In these cases we ought to always cut a groove in the material be-

fore baking at the line in which the proximal and occlusal part of the inlay join. The chief cause of apparent warping of the matrix and consequent misfit is *faulty handling* of the matrix, either in removing from the cavity, or in the consequent work in the laboratory. You hear, as said before, frequent complaints of warping of inlays for the buccal surfaces of bicusps, and also of inlays for compound cavities in the same teeth. Many operators think it impossible to make a perfectly fitting inlay for these cavities, because they claim the porcelain mass in shrinking tears the matrix out of shape. The fact is that it is a very difficult task to work porcelain powder into thus shaped matrices without bending them in the attempt. A few may, by long experience, acquire enough skill to handle these matrices successfully with the aid of a pair of pliers. But even with them the danger of accidental bending will always be very imminent. By far the safer way, especially for the beginner, is to use an investment. The work then is surer and less exacting. The percentage of warped fillings is very materially lessened by this precaution. I would recommend it to all who have had failures with inlays for such cavities. I use powdered asbestos, which investment I often dispense with before the last baking.

There are a great number of other points I would like to touch upon in a paper like this, for the sole reason of inviting a discussion which might further us all, and set and keep us thinking. Especially the question: Why does decay not occur around porcelain fillings in a comparatively short time after insertion, has always been of great interest to me. But on account of the length of this paper, I must refrain from entering upon this subject at the present time.

STIGMATA OF DEGENERACY IN RELATION TO IRREGULARITIES OF THE TEETH.*

BY EUGENE S. TALBOT, M. D., D. D. S., CHICAGO.

Degeneracy, a frequently used but often misapplied term, denotes a condition whereby an organism departs from the type or what in a particular race and age would be considered the type. It implies a gradual change of structure whereby the organism becomes adapted to less varied and less complex conditions of life. The opposite process of elaboration is a gradual change of structure in which the organism becomes adapted to more varied and complex

*Read before the Minnesota State Dental Association.

conditions of existence. In elaboration there is a new expression of form corresponding to new perfection of work in the animal machine. In degeneracy there is suppression of form corresponding to the cessation of work. Elaboration of some one organ may be a necessary accompaniment of degeneracy in all the others. This is very generally the case. Only when the total results of the elaboration of some organs and the degeneracy of others is such as to leave the whole mass in a lower condition, that is fitted to less complex action and reaction in regard to its surroundings than is the type—can the individual be regarded as an instance of degeneracy. The number of stigmata (as the evidences of degeneracy have been called since the time of Shakespeare) to a certain degree may indicate the amount of defect. This test is obviously only relative since the sum total of the constitutional condition must be taken into account. The stigmata are expressions of hereditary defect indicating the direction of the disturbance of organic balance produced by the control of the central nervous system over the local nervous system governing growth and repair.

Degenerates consist (speaking of the more extreme cases of degeneracy), of the deaf, dumb, blind, insane, criminals, hysterics, harlots, egotists, one-sided geniuses, liars, pessimists and sentimentalists. These are extreme conditions shown from a moral standpoint chiefly. The stigmata of degeneracy are represented by some deformity of the human body. It may be located in the face or any part of the body. A degenerate man, according to the French and Italian writers, must have more than one deformity. Italian writers claim a man must have six deformities; that is, they must have six abnormal conditions in order to be degenerate, and the French say five. It is not difficult to find among the class of people to whom I have called your attention to have that number. Some of them range from five to twenty and some fifty. Some of the most extreme are those in which the central nervous system is involved. It may seem that irregularities of the teeth are very simple, that cause and effect are very simple, but biologic views of these deformities are different. My purpose is to take up the subject from a broad standpoint so as to give a general idea of the conditions of degeneracy and the causes which produce them.

DR. H. P. BOOTH: I would like to ask in regard to degeneracy how nature works to produce these different conditions through degeneracy before they have made their appearance.

DR. E. S. TALBOT: Dr. Booth's question is decidedly pertinent albeit I had partially covered it in dealing with the law of economy of growth. There are three things to be taken into consideration. In the first place, considered from the standpoint of what has to be done by and through it, nutriment is limited, as to assimilation. The organism during intra-uterine life has not only to pursue a direct force of the element but has also at certain stages to develop organs and functions which must later give place to higher organs and functions and disappear. As the amount of nutriment is limited, if too much be given to these disappearing organs and functions, proper nutriment of the system as a whole will suffer and certain permanent organs will not make their appearance at the periods of stress which occur after birth. These are the period of the first dentition, the second dentition, the period between twelve and fifteen and adolescence between fifteen and twenty-five. In its intra-uterine life the organism must be so strengthened as to pass through these periods successfully. If the disappearing organs persist, it is at the expense of the system as a whole. When this struggle for existence between cells, organs and functions is under the control of the central nervous system, the less important and the disappearing organs will suffer for the benefit of the organism as a whole, in a regular manner. The degeneracy of the organ indicates, therefore, a struggle for existence which may be for the benefit of the organism as a whole or may be for the benefit of an organ or a function at the expense of the system as a whole. The stress of this struggle for existence falls upon transitory structures and is influenced by use or disuse. The jaws and teeth are degenerating for the benefit of the organism as a whole because the environment of the human body is varying so far as food is concerned and because also as has been the case with man and with the anthropoid apes. The jaw is degenerating for the benefit of the brain. As the race becomes more intelligent, the jaw is not required to do so much labor. As man does not need to tear or grind his food as animals, his jaw does not require so much nutriment, and consequently does not develop so large proportionately, but is constantly diminishing. This degeneracy of the jaw is for the benefit of the central nervous system, and hence for the benefit of the body as a whole. As the struggle for existence between the organs cannot always be balanced (because of the varying environment), irregularities of the teeth, an expression of advance, may occur. Even here

certain nervous instabilities appear. These irregularities of the teeth are involved intimately with the periods of stress and hence a most critical period for regulating teeth is between the ages of twelve and fifteen.

The nervous system is more unstable then, than at any other period in life. There is then not only a question of how to regulate the teeth, how fast to move them or how strong the appliance, but also to move them with as little pain as possible. In order to do so the nervous system must be watched. I make it a point to have my patients weighed at the beginning of the operation and each consecutive week until the work is completed and note gains or losses. I find out how much the child eats and sleeps and also note the temperature.

There is another method that will help in doing away with pressure and pain. There is nothing so trying as constant pressure. I use screws as much as possible. Springs, rubber bands and ligatures are all right and very often they have to be used, but screws are better since the pressure is even. Instead of ploughing through the alveolar process it is better to cut it away. For example, to move a cuspid erupted in the roof of the mouth (which usually will take from three to six months) there is a continual strain on the nervous system. If a burr be taken and the process cut away, the strain can be avoided. In that manner a tooth can be moved that would otherwise take months, and the nervous system is saved the strain.

(Dr. Talbot exhibited lantern slides showing various forms and phases of degeneracy as exemplified by criminals of various nationalities in the deformities of face, ears, head, hands, etc. He also exhibited slides showing the brain structure of degenerates.)

LESIONS OF THE MOUTH.*

BY F. R. WRIGHT, M. D., MINNEAPOLIS, MINN.

The lesions of the mouth, which are of particular interest to the dental profession, divide themselves naturally into three classes:

First—Simple and inflammatory conditions.

Second—A simple inflammatory condition which resembles an infectious disease, and a lesion of an infectious disease which simulates or resembles the simple condition.

*Read before the Minnesota State Dental Association.

Third—New growths which resemble infectious diseases and the infectious conditions which they resemble.

Of the first class we meet three conditions. The first is the inflammatory condition about old teeth or roots. Here we find a passive rather than the active condition. The gum is only slightly swollen, just enough to give it a thickened appearance. Its color is not a bright inflammatory red, but a purplish red, suggestive of venous stasis instead of arterial activity. The second of these simple conditions is the necrosis of the margin of the gum due to pressure from a rubber dam, clamp, separator, ligature, etc. The gum shows an area of inflammatory redness, surmounted by a larger area of darker gray mass of tissue which has been killed by pressure. The cells of this mass undergo a coagulation necrosis, liquefy and are cast off. The adjacent tissue shows a reparatory inflammation which brings about healing almost as soon as the slough is lessened. There is another form of simple ulcerated inflammation of which I have never read a description, but have met two or three cases. It is a very slow, superficial, indolent ulceration which attacks the margin of the gum about the lower incisor teeth. The gums are swollen, of a purplish color, and along the free border is a well-marked ulcerative process. Local treatment of these cases had no effect, but they healed very promptly upon the administration of ten-grain doses of sodium salicylate, three times a day. The salicylate was not given with the idea that this ulceration was due in any manner to a rheumatic condition, but because it is one of the best remedies we have to eliminate toxins from the system. These three conditions are grouped together because they are all simple in nature; that is, are not contagious. The first two are purely local conditions, and heal quickly on removal of the cause. The third is, I believe, due to some toxic condition of the system, but is not communicated from one patient to another, and heals promptly on the administration of an alterative remedy, of which I chose sodium salicylate.

Of the second class are two members. The first, the aphthous patch, is a small, superficial, round or oval ulcer which occurs on the inner surfaces of the lips or cheeks, and on the border or under surface of the tongue. These ulcers may occur singly or be quite numerous. They vary in size from an eighth to a quarter of an inch in diameter; are shallow, extending only as deep as the subepithelial layer of the membrane. They are covered with a creamy or a yellowish white coat, which is not easily wiped off. The border is

slightly raised and they are surrounded by a bright red inflammatory area. They are quite painful and are extremely tender to the touch. They heal without scar. Closely resembling the simple aphthous patch is the infectious member of the second class, the manifestation of secondary syphilis on the mucous membrane—a mucous patch. The number of cases of syphilis cannot be exactly estimated. In 1896, Taylor, in his work on venereal diseases, states the number at five million cases in the United States, or one to every fourteen persons. In Europe it is spoken of as a universal disease. It is like the spirit of the Creator—omnipresent. And it is altogether probable that there is not one of you who, whether he recognizes the case or not, does not some time during the year perform some operation for one of these patients. In Europe, where the disease is more prevalent than it is with us, infection being carried from one patient to another by dentist's instruments, is recognized as one of the frequent causes of extra-genital infection. The mucous patch on the mucous membrane corresponds to a syphilitic papule on the skin. It is modified by the character of the mucous membrane, the epithelial covering of which is more firmly adherent to the underlying tissue than that of the skin, which prevents it from presenting the elevated appearance of the papule, and, also, by the fact that it is kept continually moist by the saliva. These lesions are usually multiple, although they may appear singly. They are well-marked spots of a pearly white color, said to look as if the mucous membrane had been touched with a nitrate of silver stick. They vary from the size of a bean to that of a penny. They are usually round or oval, but may be irregular in form, are ordinarily sharply outlined against the surrounding normal mucous membrane, and may be surrounded by a red area. They may or may not be raised above the general level of the mucous membrane on which they occur. They are at times quite painful. These patches first appear as erythematous spots. As the infiltration of the underlying tissue increases, the epithelium covering the spots becomes cloudy and finally turns to the pearly white color. As the patches grow older the epithelium may be lost, leaving a dull red, moist, glazed spot which bleeds very easily. An erosion: Mucous patches are often present without other visible signs of syphilis, but are usually accompanied by a general redness of the pharynx, which extends well forward, involving the uvula and soft palate. The points of similarity between the aphthous patch and the mucous patch are location on the mucous membrane of the lips,

cheeks, border and under surface of the tongue; the size from an eighth to a quarter of an inch in diameter; the form, as round or oval. The principal points of difference are the color, the aphthous patch being a creamy or yellowish white, the mucous patch a purely white or a dull-glazed red. The aphthous patch is surrounded by a bright red inflammatory area, while the mucous patch may be sharply outlined against the normal mucous membrane, or, if surrounded by a reddened area it is a dull red of a specific inflammation and not a bright inflammatory red. Third, a close examination of the aphthous patch shows that it has lost its epithelial covering, that it is a true ulcer, that it owes its color to a broken tissue adherent to its surface. But the same close examination of the mucous patch shows that it has retained its epithelial covering; that it has changed in color is due to an alteration in the epithelial cells and not to their loss. If the epithelial covering to a mucous patch is lost we find a smooth, dull red, glazed surface instead of a yellowish white, velvety surface of the aphthous patch. The aphthous patch is usually seen in the mouth that is otherwise healthy; the mucous patch is seen in the mouth which shows a specific pharyngitis.

Of the third class, the new growth belongs to the carcinomata, or epithelial tumors. The conditions which resemble them are the primary, tertiary syphilitic germ. The carcinomata occur very frequently about the mouth, comprising about twelve per cent of all cancer growth. They occur most often on the lips, tongue and tonsils, but may occur at any point in the mouth. They more often occur in the mouths of men than in women; in the mouths of smokers particularly, if they smoke a pipe, than of those who do not use tobacco. They very frequently have their origin at some point of irritation, as on the lip of the smoker at the point where his cigar or pipe usually rests, or in the mouth at the point of some rough or ragged tooth. They occur on the lower lip more often than on the upper, and are more often seen on the angle of the mouth than near the middle line. They are usually found in a patient forty years of age or over, but do occur much earlier. I have seen one case of epithelial of the cheek occurring in a man twenty-three years of age, and one of epithelioma of the tonsil at the age of thirty. They almost invariably occur singly, only one or two cases of multiple primary carcinoma have been reported.

The growths begin as a small hard tubercle which enlarges quite rapidly in forming a tumor, which is outlined quite sharply in the

tissue. This growth may be quite prominent above the level of the surrounding tissue, or may be so deeply seated as to be almost invisible. These tumors are peripheral in growth and as they increase in size break down on the surface in a rough, ragged ulcer in the raised border. The cells are taken up by the lymphatics, carried to the neighboring lymphatic glands, which in turn become the seat of new growth of carcinomata tissue. These tumors are the seat of pain, sharp-shooting in character, which very often is severe, but seemingly bears no relation to the size or age of the tumor. The average life of a patient with a growth of this nature, which is not operated upon, is about two or three years.

The condition which most nearly resembles the epithelium is the primary lesion of syphilis, particularly when the infection has taken place on the lip. More than once has a sclerosa been operated under the diagnosis of epithelium, and the surgeon has been much chagrined to find after four or six weeks that his patient has syphilis. The sclerosa or primary lesion begins at the point of inoculation as a small tubercle, which is surmounted by a slight scaling, and surrounded by a red area. This scaling is replaced by a small pastule, which in turn ruptures, leaving a small sore. This sore is round, shallow, with smooth, sharp-cut edges. The base is smooth, covered by a glarish white coat that is not easily wiped off, but presents a glazed surface. There is little or no discharge, and it is practically painless.

Toward the end of the second week the base of this sore begins to show a marked induration. This induration is hard, elastic, has the feeling of cartilage. This thickening, or induration, is complete in about two or three weeks, at which time—four to five weeks after its first appearance—the sore begins to heal. The healing process requires ten days to two weeks.

At the time the induration begins to make its appearance in the base of this ulcer, the nearest lymphatic glands begin to enlarge. This enlargement is not an acute inflammation, but a slow induration which extends from one chain of glands to the next, until toward the end of three weeks after the enlargement begins, or at the time the induration of the primary sore has reached its height, the lymphatic glands of the entire body are affected, and within a few days—or about five weeks after the first appearance of the sore, and eight weeks after infection—the general constitutional symptoms of

the disease make their appearance. This disease is most often met in men under the age of 35 years.

By comparing the epithelioma and the sclerose we find a similarity in that both have their beginning as a small hard tubercle which increases quite rapidly in size. Both break down to form ulcers; each are followed, after a time, by an involvement of the neighboring lymphatic glands; a difference in that the epithelioma occur most frequently in the mouths of persons over 40 years of age, the sclerose in those of younger persons. The epithelioma has a ragged, raised border, is painful, and gives off a profuse discharge. The sclerose shows a smooth-cut border, is painless, and has only a slight, if any, discharge. The sclerose is followed, after a period of four to six weeks, by an outbreak of general symptoms; the epithelioma only by a slow wasting, months after the appearance of the growth.

Gummatous lesions of syphilis usually do not occur until ten to fifteen years after infection, and then only in cases which have been insufficiently or indifferently treated. They may occur in any part of the mouth, may be superficial in the mucous membrane or sub-mucous tissue, or may develop in the deeper tissues. They may occur singly or multiple. They begin as small, hard, round lumps, lying in the mucous membrane or deep tissue. These tumors are painless and give no discomfort except the inconvenience of increased size, which may reach that of a small walnut. As the tumors increase in size they soften in the center and finally break down into deep ragged sores, with a thickened, raised border, which gives off a profuse, grayish yellow viscid discharge. If two gummata lie close together they may unite to form a single ulcer. The clinical picture presented by an ulcerating epithelioma and a gumma is almost identical, each being a tumor, lying more or less deeply buried in the tissue, surmounted by a rough, ragged ulcer, with thick elevated border, which has a very profuse foul discharge. The epithelioma is accompanied by the enlargement of the lymphatic glands which fails with the gumma. This, however, is only slight evidence, as the glandular involvement in carcinoma often is very late in marking its appearance. If the lesion is multiple, or if other evidence of syphilis is found on the body the question is settled at once. Often it is impossible to make a positive diagnosis, and one must then resort to antisyphilitic treatment. If after two weeks of energetic

treatment no impression has been made on the disease it is safe to make a diagnosis of carcinoma.

There is one form of gumma which is of particular interest to the dentist, inasmuch as he is often called on to restore or to construct some appliance to close the opening made in the roof of the mouth by it. I refer to the perforating gumma, as it is called. These gummata are small in size, not larger than a bean, are soft and round in form. They develop in the submucous tissue of the soft palate, may lie near the anterior, or posterior mucous membrane. They are painless and cause no inconvenience. After a longer or shorter period they rupture, discharging a viscid fluid, leaving an ulcer on the surface of the palate. This ulcer rapidly spreads, both on the surface and in depth, until often, after a few days, there is a perforation, or, in severe cases, a destruction of almost the entire soft palate. When the ulceration is seated on the posterior surface of the palate it extends to the wall of the post-nasal space, and as healing takes place the remnants of the soft palate are drawn upward and outward and unite with the wall of the pharynx completely, stopping all communication between the mouth and nasal cavity. Where the gumma develop over the hard palate it has its seat in the submucous tissue or in the periosteum. When the tumor softens and ruptures, the soft tissue being entirely destroyed, the bone is bare and a circumscribed portion dies and is cast off as a sequestrum, leaving an open communication with the nasal cavity. The border of this opening will heal and the opening is permanent.

In presenting this short review of the various inflammatory lesions as they appear in the mouth, it is not my expectation to be able to offer to you anything new on subjects so well known. If I have been able to present these conditions in a plain, comprehensive manner, and to convince two or three of you that syphilis is much more prevalent than is generally supposed, and that an instrument that has been used in the mouth of one patient, no matter how healthful that patient may appear, is always a menace to the next patient upon whom it is used, unless it has been properly sterilized, my object has been attained and I shall feel that my time and labor were well spent.

A STUDY OF GOLD.

BY CHARLES W. EOFF, KANSAS CITY, MO.

I have had my attention called to an article published in your issue of December 15, 1901, under the head of "Proceedings of Societies," on page 1171, in which a discussion on "Vernon's gold" was reported. At the close of the discussion, according to this article, Dr. W. V-B. Ames, of Chicago, said: "That in these deposit golds every atom of the metal was covered with a film of oxide, and that this fact might under some chemical conditions aid in deteriorating chemical effects."

As these remarks were made after a discussion as to the merits of Vernon's gold, it is presumed that Dr. Ames had reference to this gold as well as all other deposit golds; and as he speaks of chemical conditions, and facts concerning them, it may be well to mention a few other facts, which may relieve the minds of those dentists who are in any way affected by the discussion, namely:

"Metallic gold does not oxidize upon ignition in the air." (Fresenius' Qualitative Analysis.)

"Metallic gold obtained by precipitation presents the appearance of a blackish brown powder, destitute of metallic luster, which it assumes, however, upon pressure or friction; when coherent in a compact mass, it exhibits the well-known bright yellow color peculiar to it. It remains wholly unaltered in the air, at a red heat, and is not in the slightest degree affected by water nor by any simple acid." (Fresenius' Qualitative Analysis.)

"Gold does not oxidize or tarnish in the air at the usual temperature nor when strongly ignited." (Graham's Elements of Chemistry.)

"Gold is not affected by either air or water at any temperature; the ordinary acids fail to attack it, singly." (Fownes' Elements of Chemistry.)

"Gold and platinum do not combine directly with oxygen, under any circumstances." (Fownes' Elementary Chemistry.)

"Gold is not attacked at any temperature, either by oxygen or by water." (Treatise on Chemistry. Roscoe & Schorlemmer.)

"Oxide of gold, when dry, becomes chestnut brown. It is easily reduced to metal by heat, and by mere exposure to light. It is easily dissolved by hydrochloric acid." (Fownes' Elements of Chemistry.)

"Gold oxide is a blackish brown powder, obtained by heating the

hydroxide to 100° C. If this be more strongly heated, it gives off oxygen, and is converted into a brown powder of metallic gold." (Roscoe & Schorlemmer.)

"Gold oxide dried at 212° F. becomes black and is in part reduced to the metallic state; when exposed to light, particularly to the direct rays of the sun, its reduction is very rapid. It is entirely decomposed by an incipient red heat. Hydrochloric acid is the only acid which dissolves this oxide and then chloride of gold is formed." (Graham's Elements of Chemistry.)

"Gold oxide is a blackish brown powder, which is reduced by light and heat, and dissolves readily in hydrochloric acid." (Fresenius' Qualitative Analysis.)

If the statements made by the highest authorities of the world on the subject of chemistry and metallurgy are to be relied upon, to say nothing of my own thirty years' experience along these same lines, which experience has convinced me of the absolute truth of the statements made by, and quoted from, these various authorities, it will be readily seen that if a metallic gold, either precipitated or deposited, be pure, it can never be changed or altered by the ordinary methods used for its preservation.

Again: If metallic gold, in a precipitated or deposited form, be contaminated by a film of oxide when first prepared, the tendency to decomposition and reduction to the metallic state is so great, that it could only exist for a very short time.

Thirdly: If metallic gold in a precipitated or deposited form was contaminated by a film of oxide of gold, and was used by the dentist in so short a time after its manufacture that the oxide was still unreduced, it would certainly be reduced the instant it was placed upon the annealing lamp, as this temperature is many hundred degrees F. above that required for the complete reduction of all compounds or oxides of gold to the metallic state.

Lastly: Vernon's gold is deposited upon platinum plates, and after being dried and removed from the plates, is heated with hydrochloric acid for a period of thirty minutes and then thoroughly washed with distilled water. If, now, any oxide had existed after being deposited, it certainly would be dissolved and converted into chloride by the acid, and then entirely removed by the washing.

As metallic gold, once pure, cannot and does not change by any ordinary treatment; as gold oxide, if it were present, is so unstable at the ordinary temperature; and, as the heat of the annealing lamp

would certainly dissipate and reduce to the metallic state any film of oxide of gold, if it did exist, it is very clear that the remarks of Dr. Ames were made by him without any previous consideration of the subject; and that he, upon a little study of a few of the fundamental principles of chemistry and metallurgy of gold, would not again make.

DETAILS.*

BY R. C. BROPHY, M. D., D. D. S., CHICAGO, ILL.

The matter of regard for details cuts an important figure in the doings of men. In dreaming and building castles in the air consideration of particulars is not of much consequence, but in the material things we do attention to them is of very great moment. It is a matter of history that three times prior to the undertaking of De Lesseps had canals been constructed across the Isthmus of Suez, each one in turn to be choked up and obliterated; De Lesseps' canal remains, and doubtless ever will remain an open water-way. Why? Because, with greater knowledge of details necessary to be considered than his ancient predecessors had possessed, knowledge doubtless gained in part from records of their experiences, he avoided the errors in construction which they had permitted. If the canal was feasible for De Lesseps, it was feasible for the engineers who constructed it before him; De Lesseps succeeded because he regarded details; the others failed because they ignored them.

History of the laying of the Atlantic cable is replete with lessons of the value of attention to little things, details, which at first appeared of minor importance, but which assumed significance paramount to success. Darius Green, when he undertook to fly with his apparatus off the gable of his barn and landed on a manure heap, found there were certain details in flying which he had overlooked. I hope the truthfulness of the old story of Darius and his experience will not be disputed; if it is, I claim the privilege of substituting the name of one of the numerous other fellows who contemporaneously with us have had experiences similar to that reputed to him—Admiral Dewey, when he, on that memorable Sunday morning, circled his fleet in battle array before the astounded Montejó, in Manila Bay, and calmly announced to his gunner that when he was ready he might fire, felt himself a complete master of the situation

*Read before the Chicago Dental Society.

because every detail of the work in which he was engaged was subject to his consideration.

The general who leads forth his troops to warfare, the manager of great institutions and systems, the architect who plans and superintends construction of the edifice, the surgeon upon whose anatomical knowledge, aseptic precaution and skill with the scalpel depends life, indeed all who undertake specific accomplishments, find in that characteristic which prompts watchfulness of detail their greatest debtor for the success with which their efforts are attended.

In dentistry in a very great measure is success dependent upon proper regard for details. In the dentist's field of labor is comprehended an extremely wide range of conditions and requirements; indeed, I regard it as doubtful if within the entire scope of life's labors another calling can be named which is called upon to meet demands so diversified; practically everything we have to do differs from what we have done before in some particular. In operative work, in crown and bridge work, in plate work, each succeeding operation presents in some degree different requirements and demands in its execution the consideration and following out of a different line of practice, so that a constant disposition and intent to regard details is imperatively demanded in order that none upon which success hinges may be overlooked. The dentist who performs his work in a machine like manner stands a poor chance of accomplishing credible results; something more than mere getting a thing done demands his consideration.

Preparation of cavities and insertion of fillings without due regard for permanency of anchorage, immunity from recurrence of decay, subservience of tooth strength, and restoration of nature's contour, particularly the contact point, in all of which numerous details demand attention can but entail dangerous possibilities.

Complete removal of contents of root canals, thoroughness in aseptic treatment and complete and positive insertion therein of fillings, operations which in some cases approach perhaps nearer the impossible than anything we have to do in practice, we cannot hope to accomplish without the most careful regard to detail. Banding of roots if done so that the entire circumference of wall is paralleled to the full width of band, thereby insuring perfect contact of the band with the roots at all points, and forming of the band so as to nicely fill the space within the free margin of the gum without undue

impact with the soft tissues, calls for thoroughness in execution of essential details unfortunately too often void of accomplishment.

The bridge that Dr. Gooligan constructed for his friend, Schwabe, was not as perfect a success as it should have been. The doctor had met failure in bridge work on some prior occasions, but upon almost all of these occasions he had concluded that his failures were not owing so much to the way he had constructed his bridge as it was to his faulty judgment in thinking bridge work applicable for the case; he had awakened to a sense of the importance of suitable anchorage and its relative importance in the different locations in the mouth. In the case of Mr. Schwabe's bridge, in so far as anchorage was concerned, he knew that he was right in applying a bridge, for there were quite sufficient abutments, more, in fact, than there were dummies, but notwithstanding this he realized that his work was susceptible of a great deal of improvement. In articulation some of the cusps came into occlusion with the opposing teeth, while others did not, so that the force of mastication instead of being applied to the entire occlusal area of the bridge, and directly parallel with the axes of the roots, exerted undue stress at some points, and unfortunately with a tendency toward lateral strain. The doctor could see very plainly wherein his execution had been faulty, and determined to avoid a repetition of it in the future by discarding his die plate, and resuming his old-time practice of employing the carved cusp system which he knew would insure perfect occlusion, but which, because of the fact that it demanded a little more time, he had suffered to lapse into desuetude.

The dentist is visited by a patient whose dental condition has reached that deplorable state where complete removal of the natural teeth is unmistakably indicated; he proceeds to extract the teeth, knowing that in due course of time the duty will devolve upon some one of substituting an artificial denture. Is he sufficiently mindful of detail, to preconsider conditions to be met in connection with the final operation? Will he endeavor to induce a condition of the mouth favorable to the fitting and wearing of a plate by reducing the fractures of the alveolar process induced in the operation of extracting by pressing the walls of the process back into position, and by making use of a small curette in leveling, and making smooth the ragged extensions of septi? Does he think when a patient waits upon him for a plate, presenting a process cushioned anteriorly by a

mobile roll of soft tissue, that it would be well for him to excise this roll before proceeding with the construction of his denture?

Doubtless all of us, in looking backward down the avenue of the past, back to the time when kindly interest in our developing personalities inspired generous bestowal of advice and idealistic criticism, recall the assertion, "It is as easy to do a thing right as it is to do it wrong," and oftentimes, no doubt, in many, at least, of our experiences we have thought of that old maxim and wondered how anything could possibly be more colossally preposterous. For the purpose of instilling into the minds of the young high ideals and incentives, arming them with noble purposes and encouraging them in the pursuit of high attainments—doubtless the source of inspiration of the maxim—it should not be adversely criticized, but from a literal standpoint in relation to industrial matters, there certainly is not only room for criticism, but for skepticism.

We who are engaged in the practice of dentistry must appreciate the fact that there are some things which it is not as easy to do right as it is to do wrong. We know, however, that there is within the range of possibilities a right way to do everything. If, when failure to attain to our ideal of success in any undertaking confronts us, we stop and attempt to determine the cause of such failure, we will always be able to trace our trouble to some one of the links in the chain of details which tows us up the stream endeavor to the landing success; at some point, something, perhaps a minor detail, has been overlooked or imperfectly executed with the result that the operation has failed of comprehending a degree of perfection *en rapport* with our desire and purpose. With every successive tier of brick in the wall must perfect alignment be maintained else when it is completed it will likely be found that it does not stand true to the plummet's line. Perfect work here and there in any of our undertakings counts for but little if imperfect work is interspersed therewith; not only is it essential that the first step in any undertaking be properly executed, but the next and the next unto the final step, all must be equally so executed if the whole be perfect.

A cavity which is obstructed from direct view and is inaccessible is not always prepared as scientifically and the filling is not inserted with as much positiveness in the matter of marginal adaptation, condensation and finish, as is the case where the work is in direct view and directly accessible. Of course, this ought not to be, and would not be if the details of manipulation were executed with the

same thoroughness in each instance. I am willing to concede that this is accomplishable, but can it be said that it is as easy to accomplish perfect results in the former case as in the latter? Is anyone ready to believe that it is as easy to fill the small deflected or tortuous root canal to the apex, perfectly, as it is to fill it imperfectly?

To my mind, many of the dentist's undertakings are never devoid of the possibility of wrong or imperfect results, but if the hands are officered by a mind which grasps all the correlated details of an operation before it is begun, and bases its purposes and plans upon deductions made after careful and thorough consideration of them all, liability of experiencing vain regrets for unsatisfactory conception or execution of his work will be reduced to a minimum. Whether we do our work right or wrong depends primarily upon our capacity to mentally determine the details, the execution of which shall enter into it. This is genius, and without it, be our hands ever so skillful, we will fail in positiveness of perfect result in our labors.

FIFTY-SIX YEARS' EXPERIENCE IN THE DENTAL LABORATORY.*

BY L. P. HASKELL, CHICAGO, ILL.

Mr. President and Members of the Chicago Dental Society: I have not prepared a paper, but will give you a talk of my fifty-six years' experience in the dental laboratory.

It is with a feeling of sadness that I appear before you, as I consider that I am one of the only two surviving charter members of this society, the other being Dr. E. A. Bogue of New York. We met to organize in White's dental depot, then located on Randolph Street just west of Dearborn.

In 1845 I entered the office of my brother-in-law, Dr. M. P. Hanson, in Chelsea, a suburb of Boston, continuing there three years, receiving instruction not only in prosthetic, but also in operative dentistry. In the latter, however, it was quite limited. I put in three gold fillings. Amalgam was used, I think, only by a Dr. Mann, who had just introduced it under the name of *succedaneum*, and was prepared by filing a silver coin and mixing with mercury.

One of the teeth I filled was an upper molar, badly decayed. I very much doubt if the graduate of the modern dental college would

*Read before the Chicago Dental Society.

venture to undertake it with the appliances and materials of those days. No dental engine, rubber dam, serrated pluggers, cohesive gold, etc. In packing the gold the thin outer wall broke, but I went ahead and finished. Eleven years later, being associated with Dr. Allport in this city, the patient, on his way West, called to see me. Of course I was curious to see if the filling was still there. Sure enough, it was, and Dr. Allport, upon examination, said it was saving the tooth all right. However, I had long before determined to confine myself entirely to prosthetic work, and have done so, much to my detriment financially.

The manner in which dentists were educated in those days was far different from the present. There was but one dental college, the Baltimore, and that but little known and less appreciated, as it was not considered at all essential for a student; in fact, it was thought that several years' *experience* in an office would make a better dentist. There was but one dental journal, the *News-Letter*, and but seldom seen. No dental depot, the few supplies then needed were kept in a drug store.

The operating chairs were not much better than the ordinary barber's chair. There was one thing, however, the dentist did try to own, and that was a handsome case for his instruments, which was placed on a table and filled with pearl-handled, gold-ferruled instruments, sometimes with a jewel in the handle. And the more ambitious ones took delight in having the case open so as to display the contents to their patients.

The laboratory was fitted up with a cheap lathe of some description, some using a machinists' lathe. The bench tools were far more limited than now and of crude make. The dentist having to prepare his own plate, necessarily required a melting furnace or forge and mill. In cities he could have his gold plate prepared by a manufacturing jeweler, but usually made his own solder. The soldering, and it was all soldered work, was done with an alcohol lamp, until some years later gas was used and a mouth blowpipe.

The grinding up of a full set of gum teeth was an everyday experience, and as the supply of teeth as to number of molds and shades was far more limited than to-day, the making of a full denture was no child's play.

My first eleven years was devoted very largely to carving, enameling and baking of what was then known as block mineral teeth.

similar to our gum sections made in molds. They were, of course, made for each case, and not only for our own practice, but for the profession all through New England. The price charged for a set for a dentist was \$12. These were mounted the same as single teeth with backings.

The materials were all prepared by ourselves. Taking the quartz and feldspar in large pieces, heating red hot and plunging in water to calcine, broken up small with a hammer and then ground in a large quartz mortar, ours being about one foot in diameter. This was ground to an impalpable powder, mixed in proper proportions and the coloring materials added, which were the oxides of various minerals. These materials fused at a higher temperature than the teeth now used.

A carving model, with the plate upon it, was prepared, the material packed, partially dried, and the teeth carved in three blocks. These were placed on kaolin, on a slide in the furnace and biscuited, trimmed, holes drilled and pins inserted, enameled and baked.

My preceptor was the first to make a suction plate in New England. Previous to that spiral springs were used to hold the plate in place. He was among the earliest to use plaster for impressions, wax having been the only resort previously. At first tin dies were used. Perhaps you may not know just how to make a tin die, as the lead counter melts at so much higher temperature. The counter is made first by holding the perfectly dry plaster model in the lead. Then pouring the tin into the counter. As I look back I often wonder how much success there was achieved with a wax impression and tin die.

His first experiment to secure suction was with the plaster impression and tin die. The patient was an old man, with but little arch to the jaw, but the result was so satisfactory he tested the amount of suction as follows: Soldered a loop to center of plate, attached a long wire, and hung on it an ordinary water pail filled, and this the patient held up. There were no more spiral springs used in our practice, but, strange to say, I found in London that English dentists still consider them essential. There were no such things known as air chambers until several years later, but plates were fitted snugly to the entire surface of the jaw, and in this connection I would say that I am working still right along this line, after having used air chambers for many years, only with this dif-

ference that I do not allow the plate to rest on the hard palate, so as to avoid all danger of rocking, not only at present but in future as the plate is worn.

One of the newly fledged practitioners of Boston came to our office as a novice in dentistry and said if we would instruct him in making dies and swaging plates he would give us orders for the carved blocks. This we did. We found when he brought us cases for permanent work the models were very even, and were puzzled to know how it happened so often. He told us that he pared off the prominences when preparing the model for temporary work, and had the patient wear a plate swaged on such a model.

The first departure from metal plates was the introduction of the crude gutta-percha, as now used for trial plates. A Dr. Slayton, of Indiana, came to Boston and sold office rights, as he had a patent, for \$10. The process was simply forming the plate, and arranging the teeth on a rim of the gutta-percha, then forming the gum with a spatula. The teeth were heated quite warm in order to attach firmly. Some of these plates were worn a few years. As an emergency plate the method is desirable, as, for an instance, a physician who did not wish to be seen with no teeth came to my office in Chicago at 5 o'clock p. m., having with him another physician to administer chloroform. I extracted three teeth, took an impression and adjusted a set in his mouth, so that at 7:30 we were at a restaurant eating dinner.

Next came the introduction of Dr. John Allen's continuous-gum work, than which nothing before nor since has equaled for full dentures. His agent came to Boston in the fall of 1851 to sell office rights. There were twelve dentists, including myself, invested, paying from \$50 to \$300, according to amount of practice. Within a year all had abandoned it, except myself, and why? The agent's instructions were such that with my experience in the working of porcelain I felt sure, if followed, would prove a failure, and so it was. He said there was no need of backings, but invest plate and teeth in plaster and asbestos, and apply the porcelain to the lingual surface of the teeth, not on the palate, partially bake, remove investment and apply to the outside, and fully bake, apply the enamel and finish, a very quick, cheap method of making a denture, especially as platinum was about \$5 an ounce.

Instead of following that method I applied backings, as in gold

work, the teeth single plate, and also soldering a strip of platinum to connect them together. At first we did not cover the palatal surface. Forty years later I saw a set I had thus made and still in wear. Later on the continuous backings were applied, and the palate covered so that I can say, after fifty years' use of the method, it is the strongest, most natural in appearance, and only real cleanly denture used.

Following this came the porcelain plate, introduced as a patent by a Dr. Loomis, of Cambridge, Mass. I later on, in Chicago, made some of this work, but it was not what I had hoped, and I abandoned it. It is still used to some extent.

Next in order came vulcanite. In the spring of 1859, being located in Chicago, and having occasion to go to Boston, I called upon an old friend, Dr. J. A. Cummings. Taking me into his private room, he showed a set of teeth mounted on vulcanite, the first, I think, that had been made, and informed me he was the owner of the patent. A year or so later we had a set made, sending to New York to have it vulcanized. Later on we had a vulcanizer. It was a huge affair, about two feet high, made of cast iron, and to use it had a brick furnace made. When Dr. Allport came into the laboratory while this was in use he made a hurried exit, for fear it might explode. The price for an upper set was \$50. A few years later a dentist advertised teeth at "Eastern prices," \$25.

The next method was in the use of a metal similar to Watts', and called cheoplasty. This I used for a time and laid aside.

A dentist in Louisville invented what he called rose pearl, a plastic material. It was short-lived. Then came pyroxylene, similar to celluloid, but worked in different manner. This was, as Dr. Goldey once said of the combination of continuous gum and vulcanite, "like the devil's tail painted blue, more ornamental than useful."

The last of the plastics, celluloid, has been longer lived. While having its merits, and using it four years, during a part of the rubber contest, I abandoned it as a poor material for the mouth, and in later years, when having occasion to repair a set, felt ashamed I had ever recommended it.

Then came crown work, a great improvement over the old wooden "pivot" teeth, and this followed by bridge work, a method terribly abused by being used in many cases when it ought not to be, and often constructed in a slipshod manner so as to be worthless.

One of the unfortunate things in connection with the introduction of rubber plates forty years ago, has been that the great majority of dentists have come into practice since that, and have known nothing of metal plates. Now while rubber has its uses most certainly, the metal plate is far preferable on the upper jaw on account of the nonconductibility of rubber doing much harm in excessive absorption.

Since the introduction of crown and bridge work has made it necessary for all dentists to learn to do metal work, some twelve years ago, I established the first post-graduate school of prosthetic dentistry, and of course instructed these men how to successfully make metal plates. This school I conducted ten years and then gave it up. Later on my partner in the school desired to open it again, using my name, and I consented.

I have in the meantime successfully conducted classes in Berlin, Hamburg, Vienna and Paris.

I may say, in closing, my aim has been to do nothing that would bring discredit upon the profession, but to do all I could by pen and voice to benefit it.

NOTICE.

PARIS, December 12, 1901.

DEAR MR. EDITOR:

The Committee of Publication of the Proceedings of the International Dental Congress of 1900, in to-day's session, has finally adopted the first volume of the proceedings devoted to general assemblies. We take pleasure in informing you that, thanks to the postal frank granted the congress, the volume will be distributed (beginning December 25) gratis to the congressists.

Subscribers who are not members of the Congress will receive the volume upon receipt by M. Viau, treasurer, 47 Boulevard Haussmann, of the sum of thirty-six francs, the price of the subscription (charges extra).

Persons not members of the Congress may obtain the three volumes successively by sending in their request to the Secretary General, and the amount above stated to the treasurer.

Very truly yours,
The Secretary-General, DR. SAUVEZ.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Schiller Building, October 1, 1901, with the president, Dr. A. B. Clarke, in the chair.

Dr. R. C. Brophy read a paper entitled "Details."

Dr. L. P. Haskell followed with "Remarks on Fifty-Six Years of Experience in the Laboratory."

These two papers were discussed together. The discussion was opened by Dr. HART J. GOSLEE, who said: I was so deeply interested in Dr. Haskell's admirable talk, that I have lost the train of thought I had expected to follow in discussing the paper of Dr. Brophy. Dr. Brophy certainly has the happy faculty of presenting things in a most beautiful and ingenious manner. The importance of detail is something that all of us must appreciate, and especially in our field, where, as he says in his paper, we meet with such varying demands, and where the requirements are so diversified. One of the principal reasons, in my opinion, why more men have not attained eminent success, or have not achieved the prominence that our dear friend, Dr. Haskell has, in the line of prosthetic dentistry, is simply because they have not sufficiently observed details. In this day of progress, those who achieve success must do so through the possession of superior knowledge, and no one can possess that knowledge who does not closely observe detail in every sense. The reason that Dr. Gilhooly's bridge, to which the essayist referred, did not fit was due to nothing but lack of knowledge of the requirements, and to the fact that the details were not considered. So we have it all the way through, not only in prosthetic dentistry, but in operative work. From the application of the rubber dam to the completion of the work every detail must be observed if we hope to be successful.

I think the general tendency existing on the part of a great many to curtail the length of time consumed in an operation, is deplorable. It has been my practice, always, to give the necessary amount of time to everything I undertook, in order that it may be done as thoroughly as possible, and I have seldom failed where I did this. When we endeavor to curtail time, much of our work is accomplished at the expense of success.

One or two important features casually referred to by Dr. Brophy I wish to emphasize. In the first place, the reduction of those fractures of the alveolar process which always occur in the extraction of

teeth. This is a simple detail, but how important it is to the mouth and to the adaptation of a plate when the mouth has healed or become sufficiently hardened to warrant the insertion of a plate. Very few of us, I dare say, ever think of forcing these plates of bone back into position by taking the finger or thumb and pressing the borders into place.

The reason why so many cannot do successful plate work is because they do not observe the details necessary in the preparation of the impression, and the model, after securing them, and no denture can be perfectly adapted without observing such detail very, very closely, to obtain an equalization of pressure, which is so essential.

Another feature mentioned by the essayist of very great importance, in my opinion, was the excision of those flexible ridges of soft tissue which we so often find in upper mouths, where the teeth have been out for a number of years. I have a roll of such tissue in my pocket which I brought here to exhibit, not particularly because it is in itself interesting, but rather because of the history of the case. Four practitioners had attempted to make plates for this patient unsuccessfully, and two of them made more than one, but all without success. The patient was referred to me, and the first thought that came to my mind was the excision of that soft ridge of tissue. This was immediately done under nitrous oxide, and in three weeks a plate was inserted that was absolutely perfect. I am not complimenting myself, as the plate was made by one who had previously tried without success, and the achievement was due only to observing a detail that was necessary in that case, because it was almost an absolute impossibility for any one to get an accurate impression with that soft ridge of tissue present, and even so the plate would always have been susceptible to movement under pressure.

The thought and sentiment with which the essayist closed his paper is something which I want to speak of. He stated that in order to be successful in any line of art or mechanics, one must be able to picture in the mental eye the *finished* product, *before* the execution. Such is absolutely necessary, and no one can hope to attain success in any mechanical or artistic line until he has cultivated and developed the faculty of being able to picture in his eye or mind how the object will look in the finished state before he proceeds with the detail of its execution.

DR. J. S. BRIDGES: I do not think I can add very much to what has been said. I am sure, that we all appreciate the fact that

our work is largely a mass of details, and many of our so-called failures are the result of lack of detail. I remember once seeing some crowns the bands of which stood away from the roots one-quarter of an inch. There was a terrible lack of detail in that case. I believe I have nothing more to say on the subject.

DR. B. J. CIGRAND: It affords me great pleasure to be here this evening, and to have heard these able papers by Drs. R. C. Brophy and L. P. Haskell. I was especially delighted to hear the résumé on the subject of prosthesis or the dental laboratory by our venerable friend, Dr. Haskell. I will not attempt to discuss his paper, for it was simply the aim of Dr. Haskell to give us an idea of what has transpired during his career in the profession, and so I will treat it simply from the standpoint of its generalities.

There are a few things we learn by example from the past. In the first place, we have been told, and we have begun to believe, that the life of the dentist is a short one. Dr. Haskell stands as a living example in defiance of that statement. I dined with him to-day, as I wished to know something of the line of thought that he would follow in his remarks in that he had no paper to read; and I said to him, "Dr. Haskell, I am more especially interested in the formula for the prolongation of life." He said to me, "Dr. Cigrand, in the first place, my parents granted me a good, strong constitution. In the second place, I, with temperance and moderation, never abused it, and that is all there is to it." This is a concise and effective prescription and I believe it is a great lesson for us all. By temperance and moderation, of course he meant not overwork. If there is any one thing from which Chicago dentists suffer it is overwork. We should learn from his life what brought forth this old age. He was born in 1826, and is now seventy-six years old. This is remarkable, and yet we have others in the room who have probably reached to within a few years of that same age. I believe the dental profession is not dangerous to life, providing we observe the rules of life. The majority of us abuse these. Few of us take sufficient exercise and most of us are overemployed.

As regards the evolution of the laboratory, it is an interesting subject, but time will not permit me to dwell on it at length. The prosthetic division of the profession of dentistry was not born in the barber shop; it had its beginning in a jewelry shop, and with silversmiths. Operative dentistry and oral surgery during the mid-

dle ages, undoubtedly had their beginnings in the barber shop, and prior to that dentistry had its inception and recognized standing as a profession. Dr. Haskell called attention to the character of the laboratory in days of old. I remember some few years ago Dr. John S. Marshall at a banquet gave us an idea of the old-time laboratory. It impressed me very much. He said in those days it was customary to put a sign over the laboratory door which read, "Keep out." It was likewise customary in those days to have a safe in which to keep instruments, appliances and apparatus locked up. It was customary not to meet fellow practitioners and not to impart any recent ideas about dentistry. But in 1839, when the American Society of Dental Surgeons was organized, there was a revolution on the subject. Men began to gather together and exchange ideas, and gradually a great change has taken place until at the present time dentists freely and gladly meet. Instead of having a sign over laboratories that reads, "Keep out," it is well-known now that the words, "You are welcome," appear in sentiment if not in printed form. It is a well understood fact. Men meet and exchange ideas and eagerly give to one another the latest ideas.

As regards the present condition of laboratories, we have been inclined to believe that the laboratory should be a retired portion of the office, distant from windows, and not necessarily convenient to the operating room. This idea is changing and very materially. The dental laboratory in the future no doubt will be one of the best equipped rooms in the dental office. I look back with a good deal of pleasure to the time when I visited Dr. McKellops, of St. Louis, and he showed me his laboratory, with beautiful pictures and works of art adorning the walls. After entering his magnificent office, I said to him, "I would like very much to see your laboratory," and he said, "You are in my laboratory now." I was surprised. I never expected to see such a remarkably well fitted room as this was, a dental laboratory. There was no plaster-of-Paris in sight, nor was there anything suggestive of sulphur. The laboratory was clean, handsome and inviting. There certainly ought to be a tendency at the present time to make our laboratories inviting and attractive rather than repugnant. Laboratory cases recently constructed are exquisitely adapted for our work and add to the beauty of the office.

The subject of mechanical dentistry was referred to by Dr. Haskell in contradistinction to prosthetic dentistry. I prefer prosthetic to mechanical dentistry. The mechanical dentist, as I understand it,

is one who works at a distance from the patient; that is to say, the mechanical dentist prepares a bridge or a plate for a person whom he has never seen. The prosthetic dentist, on the other hand, is one who works on the living subject. He is a man who must have taken a course sufficiently broad to include a knowledge of anatomy, physiology, pathology, materia medica, microscopy, and the kindred sciences taught in the dental college. The mechanical dentist does not need any of these as he is but a material workman. He has no use for colateral sciences, because he does not come in contact with his patients. There is a tendency at the present time to take an impression and send it by mail to a distant office to have a mechanical dentist make a bridge or plate. This is a mistake, and it will have a tendency to give us a lost art. It will be very much like the art of watch-making. Although watch factories are turning out thousands of watches a day at Elgin and Springfield, it is claimed that there is not a good watch-maker in any of these establishments, because each employe gives his attention to the mechanism of a certain detail connected with the watch and knows nothing of the correlated mechanisms. Are we not narrowing ourselves in our line of work and gradually getting to the point where we specialize too much? Men now extract teeth for children and fill them, and announce that they do nothing else. Although we may not practice all the branches of dentistry and feel competent to deal with all the cases that come to us, it is unwise for us to say to this or that patient, "I know nothing of that branch of dentistry," for in the true acceptation of the term dentistry we should not allow ourselves to become so narrow as to know nothing of the other departments.

Prosthetic and operative dentistry are kindred subjects or branches of our profession, and should go together. Dr. Kingsley said some years ago that if there was a dentist living who could truly fulfill the definition of his calling, and God Almighty destroyed all the things that existed on earth, this real dentist could restore all that which God had destroyed. That may be an enormous definition, and rendered with too great a latitude, but that was the comprehensive definition that he gave of a true dentist. If fifty-six years has done so much no one can prophesy the future of prosthetic dentistry fifty or sixty years hence, as it is beyond the limits of our meager imagination.

DR. L. P. HASKELL: I would like to say a word or two in regard to a point touched on by Dr. Goslee, and that is with reference

to the excision of the ridge of loose membrane on the upper jaw. It should always be removed, but the trouble is to get the consent of the patient to do it. Occasionally a patient will have it done. About two months ago I had a woman with a flat upper jaw, with a small flexible ridge. I suggested to her that this had better be removed. Cocaine was therefore applied and the little ridge excised. Hemorrhage was arrested in a short time, and in less than ten days healing had taken place. I took an impression, made an aluminum plate, and she has no trouble now.

I recall the case of a woman of St. Paul who was sent to me last June by a dentist there. She wanted to have a set of continuous gum work. She had the same condition as the other patient, but it was a little more marked. There was a thick, soft condition of the palate, and the plate she had been wearing for fifteen years (a rubber plate) pressed into the palate at the posterior margin, so that there was a deep furrow and a high ridge thrown up back of it. If you have seen such cases, you can imagine what the condition of things was in her case. I first advised excision of the ridge, but she did not consent to it. She could not stay but a few days. I made a continuous gum set because it was absolutely necessary, as she showed her gum. She needed porcelain gums. She left the office that afternoon much to my regret. I like these patients to remain from twenty-four to forty-eight hours, if possible. Two weeks later she wrote me that she was having trouble, and I told her to return immediately. But she did not return until last week. I took the case in hand, but she did not want the ridge removed. I took a new impression, made some changes, and made a continuous gum set. There is good adhesion but the flexible ridge yields more or less. I do not think there will be a satisfactory result in this case until the flexible ridge is removed.

DR. H. A. CROSS: With reference to what has been said regarding flexible ridge, I have had to deal with a case of that kind in my own practice. A few years ago a lady called at my office and wished me to make an upper gold plate for her. She had a very flat mouth, with a flexible ridge, one of the worst cases I ever saw. I began to think at once how I was going to get out of it. I certainly thought at the time that I would injure my reputation if I attempted it. I made various excuses, and succeeded in getting her to go to another dentist. She went to a classmate of mine, and whether he made the plate himself or not, I do not know, but it was produced

through his office. It was one of the best fitting plates I ever saw in my life. The only objection to it was that the teeth were attached to the plate with pink rubber, and that as you know did not wear very well, and the teeth came off frequently. I was called upon to put a new tooth on the plate several times. She is a lady who moves in society, and has been placed in an embarrassing position several times by having those teeth come off the plate, so that she conceived the idea of having two plates. She wanted me to make another plate. I did so without cutting off the flexible ridge, and it was a splendid success. It is one of the cases with flexible ridge where a plate was made and fitted perfectly.

DR. C. P. PRUYN: In my practice, for a number of years, when a patient would not submit to a surgical operation, for the removal of the ridge that has been spoken of, and it was troublesome, interfering with the fit of the plate, I have removed it gradually by pressure atrophy. It can be easily done. Lay on the plate, where the flexible ridge is, some oxyphosphate of zinc, have it semi-soft, and shove it in the plate while it is semi-soft, and in that way you get considerable pressure. A few days later put on some more oxyphosphate of zinc, and a few days later put on some more, and you can be sure that pressure atrophy will usually remove the ridge easily and successfully.

DR. R. C. BROPHY (closing the discussion): I remember once being present at a meeting addressed by Robert G. Ingersoll. The audience was an extremely large one, and so appreciative of the talent of that great orator, and so enthusiastic over the prospect of listening to an hour of his eloquence that for fully ten minutes after he appeared upon the platform he was compelled to stand and await cessation of applause. When at last he was able to make himself heard he said: "My friends were I insensible of the honor you do me to-night my heart must be made of stone."

While you did not compel me to lose very much time through waiting for cessation of applause when I appeared upon this floor to-night I nevertheless feel that I must be very unappreciative were I to fail to regard the kind reception you have accorded me as your essayist, and the generous manner in which you have received my paper. I am very glad indeed that my paper has not been altogether a failure. Upon this same occasion Col. Ingersoll told the following story:

"I was once traveling through the South when I came to a creek

upon the bank of which there stood an old mill. The chimney had toppled over, the clapboards were flapping in the wind, the doors and windows had been broken down, the dam in the creek had been washed away by the floods of time; in fact the old mill was not worth a dam."

I had feared that my paper might be regarded by you as was the old mill regarded by Col. Ingersoll. As to closing the discussion I feel that there is not much that I should take your time to say, there has been only a concurrence of opinion expressed that as dentists we should carefully regard details and rigidly follow them out in our practice. In the matter of the question as to whether it is just as easy to do a thing right as it is to do it wrong, I would say that I regret that the gentlemen present who are upon record as supporting the affirmative end of it have not taken advantage of the opportunity to present argumentative evidence in support of their tennets. I believe there are others present beside myself who would be glad indeed to learn how to go about it to do everything right without difficulty.

MINNESOTA STATE DENTAL ASSOCIATION.

DISCUSSION OF DR. TALBOT'S PAPER.

DR. O. A. WEISS: I feel very thankful to be here this evening to have heard Dr. Talbot lecture on this subject. What little I know of it I have learned from a study of Dr. Talbot's work, and I do not feel competent to enter into any extended discussion. This is a subject in which I believe all of us would feel a greater interest if we understood it better. I have given some little thought and study to this work as it has been given to us by Dr. Talbot and I have received some little insight into it. This evening Dr. Talbot has elaborated very largely upon degeneracy as pertaining to criminals. Now I think the profession at large has gotten somewhat a wrong impression from this subject of degeneracy as applied to irregularities of the teeth because they have associated it with mental degeneracy, insanity, feeble-mindedness and that sort of thing. At the outset Dr. Talbot spoke of a degenerate as being a person whose nervous system was unstable and in whom there have been degenerative changes of the tissue or organs or parts of the body, and he went on to mention what some of those conditions were. These degenerative changes that we find are not always for the worse. Among others he mentioned geniuses and we find some of the brightest men

of our country are degenerates. I was rather in the hope that he was going to dwell a little more upon that feature of the subject, because I feel oftentimes when I talk with different people upon this question that the term degenerate is misunderstood and that they do not like the term degenerate, and I have even had students come to me and say they did not like the term, because it does not seem to convey exactly the right idea. However, as we have no other term we must accept it and try to learn what it covers. I am thoroughly convinced in my own mind that the vast majority of irregularities of the teeth are brought about through constitutional causes, the primary cause being defective development of the osseous system, or in other words the arrested development of the maxilla is the primary cause of irregularities of the teeth. It is true we have irregularities resulting from local causes, but those usually can be quite easily diagnosed. We had a little discussion upon this subject at our meeting last year when I called attention to the matter of every one making a more careful study of the etiology of irregularities of the teeth as Dr. Talbot has given it to us, observing and investigating the life of people as they come in contact with it daily, noting the results in children from nervous or neurotic parents, and I believe you will come to the same conclusion, that irregularities of the teeth in the vast majority of cases are due to deficient development of the maxillae, though in some cases it is excessive development of the maxillae. Why does the maxilla fail to develop? We are led to believe that the functions of development are presided over by a nervous system, then it stands to reason that if any part fails to develop the nervous function presiding over that part is disordered. The subject as Dr. Talbot has gone into it is a vast one. It is necessary to go into this large field of investigation in order to put this and that together to prove a point. It is true we cannot prove that neurosis or degeneracy is the cause of irregularities the same as we can prove some other things; i. e., by the microscope or scalpel or by cultures and inoculation. It is something that cannot be proven in a short period of time. These degenerative changes go on continuously in the human being, but as Dr. Talbot told us, some of these changes are occasionally brought about in a single generation, yet I think others require several generations before degeneracy becomes manifest. In the production of irregularities of the teeth the nerve function which presides over the development of that portion of the body must be responsible for that lack of development.

I should very much like to see every one take a broader view of this subject. I think they would find it a most interesting field of thought and investigation. They will be able to see and understand many things which before seemed vague and inexplicable. We see many things daily we do not understand. Before I began any investigation or study of this subject I saw many things that did not appeal to me, which since then are capable of an explanation. I have found it a most interesting subject to think about and study and I believe if tried others would have the same experience.

DR. G. S. TODD: There is no one here who has appreciated or enjoyed Dr. Talbot's lecture more than I have. I have his work on the subject and I started into read it several times but never finished it. I think there are a great many people that get as far as I did and find it pretty deep, and unless you were going to make a study of it you would not get very far. After listening to Dr. Talbot this evening I think it will stimulate me in a measure to take up the subject again, but I never expect to reach anywhere near perfection.

In this connection I wish to say that I had a case come into my practice, one of the most marked cases of degeneracy I ever saw. It was the case of a young man about seventeen years of age. He is deaf and dumb and lock-jawed. He came into the office with a toothache in the second molar. I would like to know how you would treat such a case. He cannot open his jaws at all and he has a very marked depression of the superior maxilla. I applied some medicine to the tooth and I have not seen him since. If Dr. Talbot has any way of treating such cases I should appreciate a knowledge of it.

DISCUSSION OF DR. WRIGHT'S PAPER.

DR. C. A. VAN DUZEE: I have listened with a great deal of pleasure to a review of these conditions and I do not know that I can occupy the time better in opening this discussion than to give, perhaps, in a general way, the impressions that I have received from glancing over this paper and from hearing it read. I see a great many young men in the room and a very few of the old men, and there is a valuable lesson to be learned from this paper. Dr. Black says it is his unfailing custom to make an exploration and examination of the soft tissues of the oral cavity before proceeding as we usually do for caries of the teeth. We are in a peculiar position with relation to our patients. Ordinarily these lesions are not of sufficient importance

to cause an amount of irritation to the mouth sufficient to require the patient to consult a physician or surgeon, and they come to us with these conditions prevailing which are simply incidental. I believe Dr. Black is correct in assuming the position that if we are to care for the mouth we should make a very thorough exploration of that cavity and note everything which is a departure from the normal condition. We may not be able to treat these lesions; they may be such that the services of a surgeon or a general medical practitioner may be required, but our duty is plain: We should be able to recognize them and advise our patients as to what they should do. The habit of examining closely into little inflammatory conditions of the mucous tissue is not one that is easily formed. The average dentist is required to slight the majority of these operations, especially those practicing in the smaller towns where the fees are small and everything is against the systematical study of this subject; but it is an important one and I am satisfied that the younger men will profit by a careful examination of all the tissues of the mouth at the first visit.

Toward the end of his paper the doctor mentions a subject upon which I am enthusiastic, that is the sterilization of instruments. The average man I do not believe is competent to pass judgment upon the condition of the mouth as presented to him under ordinary circumstances. If he permits himself to use instruments that are not perfectly clean or to be careless in the use of appliances and transmits a disease to a patient it is a grave error. And the pathway is so easy on the other side. It takes but a few moments to sterilize instruments. I myself use boiling water, and I think if we will boil our instruments a few moments, after we get into the habit of doing so we will always do it, because it brings the instruments out clean and hot, and simply carefully wiping with a clean towel is all that is then necessary. My instruments are laid on a clean sheet of paper after being brought from the sterilizer and wiped and left a few moments, and if there is any moisture in the serrations it evaporates. Every instrument is perfectly clean and does not go back to my case until it is thoroughly sterilized. I know then that I have obliterated that element of danger to my next patient and it is the only way to do it.

I want to thank the essayist for presenting the matter to us in the clear way in which he has. It is a broad field and it cannot be covered in one or two papers.

He makes no mention of the condition we call abscess which we

are called upon to treat, but it lies within our own field and is so common that the omission was perhaps intentional.

DR. EUGENE S. TALBOT: The essayist has outlined this subject so clearly there is little to add. It is very unfortunate that dentists are being educated along narrow lines. There was a time, however, when our narrow teaching was beneficial, but the time is now passing when a limited education will do for the dentist. The limit has exhausted itself in the clinics, which are not practical in the true sense. A broader education is demanded, for example as to lesions of the mouth.

I hope the course will be extended to four years to include pathology. Teaching pathology of the mouth or any one structure of the body amounts to very little, but general pathology is needed. Lesions of the gums are related to lesions in other parts of the body, therefore the coming dentist should know as much about man as the general practitioner. I have been working for the past two decades for the general education of the dentist. While there are many practicing dentistry who are opposed to a general knowledge of pathology, I believe the education of the dentist in medicine is close at hand.

Unfortunately when the teeth are put in proper condition the dentist neglects to observe the tongue, gums and alveolar process. This is nicely illustrated in interstitial gingivitis. There is scarcely a patient that has not inflammation of the alveolar process. Only the last stages when pus is oozing around the gums are observed.

DR. C. H. KOHLER: I have nothing to say except that I am a very thorough believer in the higher education of the profession. I believe the dentist should have a thorough knowledge of not only the pathology of the mouth, but of the general pathology of the human body.

DR. F. R. WRIGHT: I would like to ask Dr. Talbot if he has met with that condition I spoke of about the gums of the incisor teeth? I have met three cases since I have been practicing medicine. One had been in the hands of a very good dentist three months, a good, careful man, for treatment of that condition without benefit, and after one week's use of sodium salicylate the case was entirely well.

DR. WALTER N. MURRAY: What dose was given?

DR. F. R. WRIGHT: Ten grains three times a day. It was given because the patient had a general influenza that was prevalent last winter. The action of the sodium salicylate cured the patient.

although I gave it to her to relieve the pains of influenza and I succeeded in curing the girl's mouth.

As far as the classification Dr. Van Duzee spoke about is concerned I simply classified the subject in that way because the lesions that appear in infectious diseases, and the simple lesions resembling them, are more clearly brought out. Such conditions as abscess, etc., are purely surgical conditions, and are hardly to be classed with other inflammatory conditions.

I wish to thank the committee and the association for extending to me an invitation to read a paper. This year especially the honor is greater than usual, as in looking over the program I see names of distinguished men from outside the State.

DR. EUGENE S. TALBOT: Pathology of the condition is this: The structure of the part that is diseased must first be taken into consideration. These tissues are transitory and in autointoxication are first involved resulting in inflammation of the gums and alveolar process as well. If the patient could afford it I should send him to the Hot Springs to eliminate the effete matter. The treatment was perfectly logical and it accomplished the result. The treatment naturally reduced the inflammation of the gums. If iodides had been given the local inflammatory process would have been reduced also.

DR. F. R. WRIGHT: This makes me think of a report by Dr. Curtis, of New York City, read before the section on stomatology of the American Medical Association in which he reported upon pyorrhoea as treated by antisyphilitic treatment. He claimed to have made a diagnosis by microscopic examination. I do not think the diagnosis amounts to anything. Germs have never been found microscopically in the blood of syphilitic patients. It seems to me the condition was something different. The antisyphilitic treatment consisted in administering iodide of potash, but he would have accomplished the same result by using sodium salicylate. It is a mistake for him to state that diagnosis was made by microscopical examination. The German people are working night and day to find something in the blood of syphilitic patients to confirm their clinical diagnosis, but they have not succeeded in finding it, and the man who does find it and does not let it be known makes a mistake, because his name will live forever in medical history.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held October 21, 1901, with the President, Dr. L. S. Tenney, in the chair.

Dr. T. E. Powell read a paper entitled "Influence of Sexuality in the Development of the Teeth."

The discussion was opened by DR. C. E. BENTLEY, who said: The paper the gentleman has read this evening is a very interesting one, if for no other reason, for its collection of scientific data on a subject that ought to interest every dentist.

The subject of comparative dental anatomy is one that, as dental education increases, will be of more importance to the dentist. The recent decision of the National Association of Dental Faculties, which has extended the course from three to four years of seven months each, will stimulate an interest in this and kindred subjects. This subject, with others, must command attention. In this connection, I think it is not out of the way to listen to papers of this kind, and I congratulate the society on the excellent presentation the essayist has given us this evening. I do not know that I can wholly agree with all that has been said. This is a subject that I have peeped into. It is one which, unless we have means at our disposal for investigation, we are not liable to look into very deeply, because it is unattractive and dry. What conclusions I may have are resultant upon only a slight study.

I do not attach the same importance to the influence of sexuality upon the teeth as I do to other things that give the teeth their form and character. There may be some influence of sexuality upon the teeth of animals, in fact, some of the specialists in this line, particularly Cope, Osborn and others, call the cuspid tooth of animals the sexual tooth, because it is the tooth that is used in holding the female during the period of copulation. But by no means is it used only for that purpose. The cuspid tooth has an interesting history. If we follow it from the lower animals up to man, we will find that the cuspid tooth is used in a large number of animals for prehensile purposes. The cuspid tooth is used by the carnivora for tearing purposes as well. There are other influences than sexuality that give character and form to the teeth. I think the most potent influence upon the teeth is food. We notice in the herbivora that the form of the teeth is such as to give the fullest movement for grinding purposes. In the carnivora the teeth are sharp and adapted for tearing

purposes. In the mixed type, such as man, the teeth are shaped both for tearing and grinding. Food, therefore, is the most important factor in the influence of teeth of animals as well as man.

I believe it is the custom nowadays in societies to discuss the subject rather than the paper, and if I am permitted to digress a little from the essay, I will say something with reference to these forms and how they came to be.

There are two theories that are extant. One is called the concrescent, and the other the differential theory. One is proclaimed and lauded by foreigners; the other is proclaimed and championed by Americans, of which Cope and others whose names I cannot recall are the especial patrons. The concrescent theory claims that originally all teeth were of a conical shape, and typifies all teeth as they are found in the highest form of animal to that seen in the fish called the dolphin. The teeth of the dolphin interdigitate, and they are for prehensile and tearing purposes. The dolphin has 240 conically shaped teeth. Those who believe in the concrescent theory say that in the evolution from the simple to the complex there has been a gradual coalescence of these 240 cusps, and that this coalescence has continued on and on and up and up until we reach the higher order of the mammalian kingdom. If we analyze that theory in man, we find that the central incisor, for instance, is made of four cusps. The lateral incisor is made of four cusps, three on the labial, one on the lingual. The cuspid, a degenerate tooth, is made of four cusps, all of which are converted into one. The bicuspids and molars each have their full complement of cusps. There has been a coalescence of the cusps until the 136 can be accounted for.

The other theory, the differential theory, is that there has not been a coalescence of these cusps; but that the cusps have sprung from a single cone. Thus in one cone there has been in the process of attrition or mastication developed the need of another or two cones, and two cones have grown there by the side of the one, and we have a tritubercular tooth. That is the differential theory. It can be elucidated and elaborated to a considerable extent. You can choose between either theory. So far as I am personally concerned, I lean toward the concrescent theory. Dr. W. C. Barrett, in discussing this subject before the National Dental Association a year ago, leaned toward this theory; while Dr. A. H. Thompson, of Topeka, Kan., leaned toward the differential theory. There is a difference of opinion. It is interesting in so far as it appeals or suggests to our

mind the possible evolution of the forms of teeth of man. If you are interested in this subject, you can look it up for yourself. It will require a great deal of scientific investigation.

I have previously remarked that the food of man has more influence upon shaping the teeth than any other cause. I believe sexuality as a cause is simply incidental rather than primary. The power of prehension is more often used with animals than it is for sexual purposes. If we will look, for a moment, to the lower order of man, the macrodonts, we will find that they have often two intermediate cusps in the first and second molars and often a fourth molar. The macrodonts use their cuspid teeth for prehensile purposes along with their hands, while man has developed his brain and his hands; his capacity for prehension with the teeth has diminished. Man can likewise permit his little finger to touch his thumb. No other animal can do this but man. Our capacity for prehension has grown, and as it has grown it has diminished the faculty of the cuspid teeth which our ancestors used before us.

DR. POWELL (closing the discussion): I have nothing in particular to add. I think, perhaps, Dr. Bentley is right in saying that the food has more to do with the development of the teeth than the sexual instinct. We have had that part of the subject discussed before, however, and I simply brought up the secondary influence for discussion, because to me it was an interesting question. I do not think Dr. Bentley gave the secondary influence the important place that it deserves. He forgot to mention the fact that the same kinds of food taken by both the male and female produced different results in the two. Why? On account of the stronger sexual nature of the male. My opinion is that the development of the heavy neck and of the cuspid teeth in the horse and some of the other animals is due to the extreme irritation of that part of the anatomy from the sympathetic nervous tissue. We know that when we exercise a muscle it grows, and if we exercise a part of the sympathetic nervous system more than any other part, that part develops the tissue surrounding it more than any other part of it is developed, and that accounts, in my opinion, for the excessive development of the neck and of the cuspid teeth.

Dr. Hugo Franz read a paper entitled "Porcelain Inlays."

In the absence of Dr. J. E. Nyman, who was appointed to open the discussion on this paper, the President called upon Dr. E. M. S. Fernandez to do so.

DR. FERNANDEZ said: Mr. President and Gentlemen—It is a difficult matter to discuss a paper like this on short notice. I consider that the essayist has brought out some points that are very important and useful for us to remember and understand. Inlay work is certainly an old subject. I know many gentlemen who have been working on them so far back as twenty-seven years ago. They used jewelers' enamel, fused by the action of a blowpipe on a gold matrix. In some cases they made very pretty inlays, considering what they had to do it with. No doubt the conditions have changed. In the first place, the dentist is more willing and able to work than he used to be years ago. The patients also are more anxious and desirous to give us their aid, and to give us better compensation for the work we do for them now. And, also, we have materials to-day that we never had before for the work. The materials we have to-day are to some extent good, but when we consider the work that is expected from the dentist to-day, they are comparatively poor. The porcelain we have to work with to-day is very unreliable and very difficult to work. I think that an artificial tooth of a very high fusing kind, ground down to a fine powder, is the best material we have for the purpose, and is the most reliable.

In regard to instruments, I do not think we need many of them. The trouble is we try to use too many instruments. If I understood the essayist correctly, he said that we tried to do this work in the mouth before acquiring experience, and I have no doubt most of the failures are due to the fact that we try to do work in the mouth before we have learned how to do it out of the mouth. I would advise those who desire to take up porcelain inlay work to learn how to do the work technically first. They will be surprised to find how much easier it is than they had expected.

In regard to separating the teeth for the purpose, I do not think it absolutely necessary. The necessary separation is very slight, in my estimation. I consider the use of the rubber dam very necessary for several reasons, one being that you can see the margin of the cavity much more distinctly. In some cases I have found the rubber dam charged with aluminum very useful. The cavity should be kept as dry as possible during the procedure of all the work.

DR. BENTLEY: Do you use the rubber dam when you are preparing the cavity for the matrix?

DR. FERNANDEZ: Yes, sir, wherever I can. In preparing cavities for inlay work we should use all the grinding material we

can. If we cannot use grinding stones, we can use grinding powders in connection with soft metals, and wash them away from the cavity after the cavity is prepared. If I use a steel instrument, I want the cavity as dry as I can get it. I try to avoid, as much as possible, heating up the enamel or any part of the tooth.

In regard to a perfect fit, there is a great difference of opinion as to what is meant by a good fit. I claim that the dentist who will make a porcelain inlay a perfect fit to a cavity will make a worthless inlay, for the reason that we have not the cement for that purpose to-day. That is what we need mostly for this work, a cement which will be insoluble in the acids of the mouth, transparent or almost colorless, non-irritant and very thin in consistency.

The cement we have at present occupies considerable space. Therefore, the matrix should be of the same thickness which is to be occupied by the cement. In a great many cases I think it is best to make an inlay slightly tapering-shaped. It is too difficult to explain in words how to make an inlay and be clearly understood. I will say a few words, however, which I hope will be clear to you. I prefer to use a heavy platinum, and also not to invest it. I prefer to have the heat come in absolute contact with the platinum while baking. By doing so the cracking of the porcelain and a great deal of shrinkage is prevented.

To bake an inlay I first drop a globule of the porcelain material in the center of the matrix, then I tap it, and get it as dry as I can by tapping. Evaporation will dry the water. By constant light tapping the porcelain material will settle to the bottom and evaporation will take care of the water. If you have that well packed, you will be surprised how little shrinkage you have, if any. I bake once with only one-quarter of the matrix filled. I do not bake it to a high fusing point, but I flow it so that it is almost glossy, then I add two or three more parts to it, packing and baking each time as before. The last time it is baked to a gloss. Supposing you get a perfect fit, you have a piece of porcelain that fits the cavity perfectly. You cement it; and you find the inlay protruding from the cavity so you are obliged to grind off the surface in order to have it flush or even with the surface of the tooth. That is one of the greatest mistakes made in porcelain inlay work. Therefore, if you make the walls of the inlay slightly tapering, and remove with a sandpaper disk the gloss from the parts of the inlay that fit into the cavity you will have, when cemented, an inlay flush with surface of the tooth with-

out grinding it. The cement occupying only the space which was removed by the sandpaper disk.

A MEMBER: How are you going to leave that?

DR. FERNANDEZ: By having a tapering shape to the cavity. You have the thickness of the platinum to allow you to drop the inlay into the cavity, and then the other amount of space you gain is that which you remove with the sandpaper disk, taking the gloss off from the parts which will bear against the cement. If you try to cement an inlay, leaving a glossy surface, it will not hold.

I do not try to make undercuts in an inlay. It is a difficult matter to do so, and it is very hard to get the cement to run around into the undercut. But I do take the gloss off, as by doing so it leaves a better surface for the cement to take a good hold.

In regard to the color, I find if the color is one shade lighter it will look better.

If I try to match it exactly, I cannot do so except by accident.

With reference to the proportion of failures, I do not think they should amount to forty or fifty per cent if we learn how to make porcelain inlays outside of the mouth first. The cement is a great question now and I hope our chemists will before long help us out.

DR. THOMPSON: There are several points of interest not mentioned in the paper which I should like to speak of, but first I should like to say that I agree with Dr. Franz in that we have need to keep hot on this porcelain inlay subject.

Porcelain is the only practical substitute for gold for anterior fillings, and is its superior in that it is more natural in appearance, is less responsive to thermal change, and can be inserted with less time and discomfort for the patient.

The idea suggested by the essayist advising beginners to commence the study of porcelain fillings in cavities out of the mouth I think good. I do not think it possible for success to come in any other way, and when they shall have learned to absolutely fit a platinum matrix to a properly shaped cavity, and by continual practice in mixing and baking the porcelain until judgment so ripens that desired shades may be secured without suffering shrinkage to spoil the fit, they are ready to begin practical restorations.

Shrinkage as generally applied to porcelain is that which takes place while the porcelain is on its way from a powder to a plastic, almost liquid, mass when fused, but this has no warping effect upon the matrix and can be dismissed, but that which occurs between the

time when the porcelain is wholly fused and becomes cold is the real difficulty and can seldom be entirely controlled.

DR. C. E. BENTLEY: This is one of the subjects that the whole dental profession at present is interested in. I believe Chicago dentists are more interested in it than any others in the profession. I think we are on the right track and are doing splendid and conscientious work in this line. The symposium held at the Chicago Dental Society and this paper to-night mark an epoch in inlay work. I have been very much interested in this work of late. The paper this evening impressed me as being sound from beginning to end, and I want to say a few words with reference to it.

First of all, I want to take exception to some of the remarks Dr. Fernandez has made with reference to the matrix. If I quote him correctly, he says that he applies the rubber dam while he is fitting the matrix.

DR. FERNANDEZ: I do not apply the rubber dam while I am fitting the matrix. I have the rubber dam on, and have the cavity prepared before I attempt to fit the matrix. I think I said that I fit the matrix with the rubber dam on wherever I can do so.

DR. BENTLEY: From the experience I have had in this line of work, I believe the matrix is best fitted without the rubber dam, for the reason that we can get the matrix underneath the gum that is occupied by the space of the rubber dam. Another reason is, if we are desirous of having the correct color, which is one desideratum in inlay work, we will be deceived in the color by the use of the rubber dam.

DR. FERNANDEZ: I take my color before I do that work. I match the tooth, which will be as near a match as I can have, especially if I can get it one shade lighter.

DR. BENTLEY: That, of course, eliminates the objection I raised. I would seriously oppose what Dr. Fernandez has said with reference to conically shaped cavities. If I understood him correctly, he does not care whether the end of the cone would fit or not, so long as the edges were in absolute contact. That would make a more perfect inlay.

DR. FERNANDEZ: But we cannot get absolute contact. You will remember I used the words "good contact."

DR. BENTLEY: The point I want to mention is this, regardless of the objection, that the more nearly you can get an inlay in absolute contact in its entire surface, the stronger the inlay, and the

greater the liability of its retention, on the principle of the carpenter who has the least possible cement or glue between two joints. There is less liability for that joint to break. In my opinion the matrix should be in contact with every part of the cavity, and the least possible amount of cement should be between the inlay and the cavity, and the inlay is more liable to be retained than an inlay that has a great quantity of cement. I have seen inlays in mouths that have stood there for years. Dr. Thompson showed me an inlay that had been in for twelve years. A patient showed me an inlay that has been in for nine years. There was no disposition toward decay about the edges of either of the inlays. The only criticism I could make possibly was with reference to their color.

Nothing has been said to-night particularly with reference to colors and shades. If we make an inlay in the lower third of any of the anterior teeth, particularly the incisors or cuspids, when the lip is raised, the color is entirely different than when the lip is lowered, and that is what Dr. Head, of Philadelphia, has called the "shadow problem." There is a way to overcome or minimize this shadow problem, and I think Dr. W. T. Reeves, of Chicago, is responsible for this, and I gladly give it to you as his thought. Dr. Reeves claims that the larger the number of layers we may have in an inlay, the less the liability of the shadow problem, and I have found that to be true, especially in the anterior teeth of the lower third of the mouth, where the lip itself makes the shadows. If we bake, for instance, our foundation body, getting the contour, etc., of a high fusing body, and then add layer upon layer upon this foundation body until we have our exact contour, the shadow problem is reduced to a minimum.

Another point. I have not yet found it necessary to invest my matrices. I believe I can get better results by burnishing the matrix in the mouth, and for this I need space, and I get space before I attempt it. The matrix is burnished, as best we can, with pledgets of cotton, and with strips of linen. But the most important thing to me is another one of Dr. W. T. Reeves' ideas, and that is the folding of a heavy piece of rubber dam over the matrix and drawing it labially and lingually until that is held, so far as its periphery is concerned, in almost absolute fixation, and then with a burnisher you go over all parts of the matrix—I mean all parts of the cavity, in the periphery of the cavity, and in the body of the cavity, and you will be surprised at the splendid adaptation you get.

The essayist says he believes that the warpage is due to mal—or poor manipulation. I agree with him. It requires the greatest amount of skill to tease the matrix out of the cavity at times without causing distortion. Having gotten the matrix out, I can get the best results by baking from that line without investing my matrix.

I certainly agree with Dr. Fernandez, who says that we need a cement which is colorless and a liquid. The cements we have to-day are inadequate in many ways. First of all, we may have an inlay that is almost absolutely perfect in its color effect, and with the four or five different cements we have to-day, none of which may be like the inlay you have, it will reflect through your inlay and spoil the color effect you have striven so hard to obtain.

DR. A. E. MOREY: The paper of Dr. Franz was an excellent one, presenting a subject which is very interesting to me as well as to others working along these lines. Porcelain inlay work requires good judgment in its application, and if we are exact in the preparation of cavities and in following the lines of matrix preparation which should be mechanically perfect, we will have very little trouble in our further manipulation of the body. I do not agree with Dr. Fernandez that we have not a good porcelain body at present. I think we have a very excellent one, not that it is perfect by any means, but good results are obtained from the present material. Time is an element in making porcelain inlays, because it cannot be so quickly placed as gold by good, accurate, rapid operators. The Jenkins' system, and some of the lower fusing porcelains, can be quickly placed and very accurately, and are no doubt better in some cavities than the other bodies that take longer and require a more perfect color, yet the very best general results in color and adaptation are with the high fusing bodies.

With reference to the cement idea, I think if we had a transparent balsam that would retain an inlay in the cavity and not be much affected by heat, where the porcelain inlay exactly conforms to the cavity and very little retaining substance is required, it would solve a great problem.

I do not consider the use of the rubber dam necessary in very many cases, but often more rapid work can be done with the rubber dam. This inlay work in general increases our facility for handling a certain class of cases, especially those which require artistic treatment.

DR. HART J. GOSLEE: I do not know that I can say any-

thing of special interest upon this subject that has not already been mentioned. I was, however, especially pleased with the paper, and desire to compliment the essayist, not because it is the general custom to do this, but because he deserves a compliment for having presented one of the best papers on this subject that I have had the pleasure of listening to, for the reason that it appeals particularly to the beginner, and points out decidedly and emphatically many of the pitfalls that he will stumble into in his experimental work. That there is a field for porcelain inlay work cannot be doubted or disputed, and the modern operator who does not acquire some ability in that line is unpardonably negligent, in my opinion, because there is such a gradually increasing demand for it. The prominently typical cases where porcelain inlays are indicated were properly suggested by the essayist as being in labial cavities upon the eight or ten, and especially the SIX, anterior teeth, and also in those cases where a devitalized pulp and a disintegration of the tooth structure has left the remaining enamel walls somewhat weakened and unsupported. In such instances it is frequently a difficult matter to adapt gold skilfully to those weakened walls, and an inlay offers the advantage of more easy and perfect adaptation, and a greater support to the remaining enamel walls because of the adhesive qualities of the cement, than the best gold filling can possibly afford. In the work I have done in this line I have not been especially particular as to whether I adapted the matrix to the cavity with the rubber dam on or not, and am of the opinion that its application is not always necessary. I go by the conditions of the case—sometimes feeling that the application of the rubber dam will facilitate matters, and again that it will be objectionable, perhaps, by being in the way to some extent, depending on how close to the cervical portion of the tooth the cavity extends. In very large cavities I believe that the best results can be obtained by first swaging the matrix and finally burnishing and adapting it to the cavity itself. Platinum, in my experience, is the best material for the matrix, and should be of about 1-1000 in thickness.

I do not feel that it is consistent with my experience to allow the remarks of Dr. Morey to go by without saying something in reference to Jenkins' bodies, because I am afraid that from what he said some, without much experience in this line, may waste a good deal of time in experimenting with this body, and, for that matter, with any low fusing body, because of two great difficulties.

First of all, the colors are usually very unreliable in low fusing bodies. Secondly, the edge strength is so diminished and sometimes so poor that I feel that we can only depend upon the higher fusing bodies for the purpose. We have some splendid porcelain bodies on the market to-day, several kinds that are good, and, I am sure, that much success is being obtained in their use.

The question of the shrinkage of porcelain, in my opinion, does not enter into inlay work to any particularly great extent, because the shrinkage takes place within the mass of porcelain itself, and, as has been said by the essayist, the form of the matrix is not altered or changed to any appreciable extent. In a matrix for a cavity, however, where the surfaces are at right angles with each other, the essayist makes a splendid point in saying that a cut should be made in the body at the angle, so that the shrinkage will not take place with a tendency to draw the ends closer together and thus destroy the accuracy of adaptation of the matrix, and, of course, the inlay also.

I cannot think of anything else to say except to commend, most highly, the idea of the beginner confining his first efforts to the dummy, for I am sure that no one can learn to do this work successfully unless he first and thoroughly learns the technique upon an extracted tooth or dummy.

DR. HUGO FRANZ (closing): Just one word in reference to rubber dam. In cases of cervical cavities on the labial surfaces of the ten anterior teeth the advantages of porcelain inlay work are forfeited, to a great extent, when the attempt is made to use the rubber dam. I am an absolute disbeliever in this instrument of torture for these special places whenever its application cannot be easily accomplished. In the preparation of all proximal cavities the rubber dam ought to be used, but if we come to burnish the matrix, we will find that even in these instances the omission of the rubber dam once in a while is advisable.

I have had gratifying results with porcelain inlays for pulpless teeth. Any time bleaching becomes necessary it can be done without removing the inlay.

I had an excellent opportunity to get an idea of the durability of porcelain inlay work while in Dr. Jenkins' operating room in Dresden, Germany, last fall. He very courteously introduced me to his patients and showed me inlays which were placed ten to twelve years ago. These inlays were still doing good service. In regard

to color, Dr. Jenkins in his work is not so particular as we are in Chicago. High fusing bodies no doubt are more reliable, yet I have inserted quite a number of Jenkins' inlays which stand the comparison with those of higher fusing body very nicely. There seems to be no reason why those who are the fortunate possessors of the Jenkins' outfit should discard it.

An interesting case in my own practice went to show how persistently inlays will be retained even with the cements we have to-day. It is in the case of two porcelain inlays placed twelve years ago by a dentist in Florence, Italy. They were ground from an artificial tooth to fit two cavities in the left lower bicuspid. Mesially as well as distally secondary decay has occurred in the meantime, yet the cement holds onto the inlays. I keep the new places of decay filled with gutta-percha.

A great deal of ground was gone over in the discussion which was more effectually covered by the papers which I referred to as having been read before the Chicago Dental Society. Yet reiterations are of high value at times. It seems they are especially wholesome in dentistry. As Dr. Goslee emphasized it in his remarks, my own endeavor in this paper was to create interest and give a few practical hints to the beginner. I did not make an attempt to cover the whole subject, nor did I care to indulge in repetitions to too great an extent.

THE NINTH ANNUAL CLINIC OF THE CHICAGO COLLEGE OF DENTAL SURGERY ALUMNI ASSOCIATION.

REPORTED BY R. C. BROPHY, M. D., D. D. S., CHICAGO, ILL.

The Ninth Annual Clinic of the Alumni Association of the Chicago College of Dental Surgery was held at the college building on Jan. 22, 1902, and marked decided advancement in magnitude and general excellence over the record of past clinics of the association, highly successful though they all have been.

In addition to the work of the clinic proper, and the excellent banquet which followed, the occasion was made memorable through the ceremony of formal presentation by the Alumni Association to the college of a life-size portrait of the late Dr. George H. Cushing. Dr. Edgar D. Swain, of Seneca Falls, N. Y., delivered an able address upon the life of Dr. Cushing, and was followed by Drs.

Edmund Noyes, and T. W. Brophy, paying tribute to the dominating traits of his character which so endeared him to all, the latter accepting the portrait for the college.

A brief summary of the clinics given is appended:

DR. J. B. MORGAN, Davenport, Iowa: "Removable Bridge Work." Shell or open faced crowns are adjusted to anchorage roots, or teeth, and by the use of a jig, loops of metal called keepers are placed against the sides of the crowns, and held absolutely perpendicular and parallel to each other. These keepers when soldered in position on the crowns receive anchor attachments upon, or about which the bridge is constructed. The bridge may then be removed and replaced at will. Dr. Morgan does not sell office rights, and has his attachments and jig upon the market at a reasonable price.

DR. A. C. HEWETT, Chicago: "Combination Fillings, Gold and Amalgam, to Form a Bar to Oral Fluids." Case, left upper central incisor distal cavity. Sterion white alloy amalgam and Williams' gold foil cylinders were used compounding and finishing at a single sitting, Dr. John C. Kinney operating. Claims made by clinician are as follows: That much less time is needed than with gold alone. That with a thin coating of sandarac or resin varnish spread upon dentinal walls and gingival margins a layer of amalgam can be quickly burnished upon said walls and margins, and a base formed upon which to build gold that will remain an absolute bar to oral fluids. That the cohesion of gold to amalgam and of the amalgam to dentine adds very largely to stability and preservation. Such use of amalgam is not advised in exposed positions, or behind exposed translucent enamel.

DR. WILLIAM A. HECHARD, Indianapolis, Ind.: "The preparation of sensitive cavities and removing live pulp, using original apparatus to administer nitrous oxide to render the operation painless. Keeping the patient asleep for any desired period with the mouth open." This clinic demonstrated the practicability of administering general anesthesia for pulp removal and kindred dental operations, and showed the advantage of the clinician's apparatus for giving gas, in that by its use no interference is had with operations in the mouth.

DR. J. B. VERNON, Kansas City, Mo.: "Platinum and Gold." Demonstration of clinician's new platinum gold, a combination of the two metals for dental purposes. A filling was placed in the occlusal

of a molar, hand pressure being used. The claims of Dr. Vernon are that with this pressure greater density can be attained than is possible with other gold, and that it may be more perfectly adapted to cavity walls.

DR. CHAS. J. SOWLE, Rockford, Ill.: "Gold Filling, Using Matrix, and Separating Rubber for Wedge." A disto-occlusal cavity in an upper left first bicuspid was filled by clinician, and an excellent result shown of the use of the matrix, with rubber wedge.

DR. C. N. JOHNSON, Chicago: "Demonstrating the shaping of different forms of cavities upon models." The methods of cavity preparation employed by clinician and taught by him were plainly shown by the use of models.

DR. TRUMAN W. BROPHY, Chicago: "Surgical Clinic." Patient No. 1—A boy three years old, presenting extensive cleft of palate, and extreme hypertrophy of the tonsils. Clinician explained inexpediency of attempting an operation upon palate without first removing tonsils, showed that it would not be wise to attempt both operations at the same time and announced his purpose to remove tonsils at this operation, leaving the palatal operation for a future time.

Patient No. 2—A gentleman from Lansing, Mich., who had been afflicted with facial neuralgia for three and a half years, of such persistent nature that permanent relief had been beyond the ability of his physicians. The operation indicated, as announced by clinician, was removal of the inferior dental nerve, and it was proceeded with as follows. An incision was made down over the inferior dental foramen, and the tissues and membranes pressed back until the foramen was located. The nerve being disclosed, it was followed back for some distance from the foramen and its branches removed. An incision was then made a little below the parotid gland, and carried beneath the tissues into the sigmoid notch. A piece was then cut from the oblique portion of the ramus of the jaw, between the coronoid process and the neck of the condyle, cutting it down far enough to expose the portion of bone opposite the foramen. The nerve was then lifted out and removed.

DR. A. H. PECK, Chicago: "Surgical Clinic." Surgical treatment for chronic alveolar abscess; examination disclosed the bone about the tooth to be carious and somewhat denuded. The carious bone was thoroughly curetted out and instructions given to cleanse and keep irrigated with some antiseptic solution.

DR. W. V-B. AMES, Chicago: "Exhibition of a number of peculiar and interesting models."

DR. GEO. B. PERRY, Chicago: Demonstration of a method of mounting and truing up engines and lathe wheels and disks.

DR. CHAS. E. BENTLEY, Chicago: "Porcelain Inlay." A practical demonstration of porcelain inlay work, commanding much interest and showing a beautiful result.

DR. L. S. TENNEY, Chicago: "Anterior restoration, using platinum and gold foil, No. 30, and engine mallet." A successful operation resulting in a filling much less conspicuous than one of gold alone.

DR. R. B. TULLER, Chicago: "Operative procedure on Dr. Bryant's tooth form." A demonstration of the advantages of Dr. Bryant's denture, which consists in a full complement of upper teeth, made of hard rubber and set in a soft rubber base, for technical work in teaching, and exhibition clinical work.

DR. LEONARD C. BORLAND, Chicago: "The dissections and drawings in practical anatomy." A most interesting exhibition of work of clinician's pupils in anatomical study.

DR. W. T. REEVES, Chicago: "Porcelain Inlay." Expert construction of inlays with explicit demonstration of detail.

DR. LEIGHTON, Portland, Me.: Restoration of the major portion of a molar with porcelain.

DR. C. S. CASE, Chicago: "Exhibit of Orthodontia Appliances." An elaborate display of appliances employed by clinician in regulating malposed teeth.

DR. HART J. GOSLEE, Chicago: "Porcelain." An interesting exhibit of porcelain work, in its various stages of completion.

DR. E. R. CARPENTER, Chicago: "Extirpation of Dental Pulp, employing saturated solution of cocaine." Application of cocaine in saturated solution was demonstrated to be sufficiently obtundent to admit of immediate and painless removal of pulp tissue.

DR. J. J. REED, Rockford, Ill.: "Cement Anchorage for Fillings." Remove carious dentine and properly prepare cavity. Line cavity with thin cement, being careful not to use an excess. Place a pellet of amalgam in cavity and spread it over cement, crowding out excess, and forcing it into closest contact with cavity walls. Add more amalgam until a metallic surface is shown, then clear extreme margins of any cement, adjust matrix and proceed as usual with filling.

DR. C. P. PRUYN, Chicago: "Root Canal Filling." The use of gutta-percha and sandarac varnish was demonstrated and highly recommended by clinician as an excellent method of filling root canals.

DR. RUDOLPH BECK, Chicago: "The Correct Adaptation of Gold Crowns." By the use of an instrument designed by clinician the periphery of the crown is accurately adapted to the root wall.

DR. C. F. BRYANT, Chicago: "Baking Continuous Gum Plate." A full upper case was finished by clinician, using the new Hammond drop bottom electric furnace.

J. B. HAMMOND, New York: "Electric Furnaces." An exhibit of the various styles of electric furnaces designed and made by clinician, and their practical operation.

DR. LESTER F. BRYANT, Chicago: An exhibition of expert manipulation of porcelain body in building and carving.

DR. R. C. BROPHY, Chicago: "A New Gas Porcelain Furnace." Demonstration of the operation of a gas furnace for porcelain work.

DR. F. M. RICHARDSON, Chicago: "Gas Extraction." A successful demonstration of gas anesthesia in the removal of fourteen teeth and roots, using the Hurd inhaler.

DR. J. P. BUCKLEY, Chicago: "Bleaching an anterior tooth, using Sodium Dioxid, and giving a test for the efficiency of the chemical used." Dam is placed over tooth and adjacent teeth. A thin platinum band is placed about tooth to be bleached and white gutta percha warmed and pressed about it to form a pocket about cavity. By the use of a small gold or platinum spoon the powder is placed in cavity, and with a glass instrument is forced down into it and into upper third of root. Distilled water is now dropped into cavity. A platinum ribbon is now held over cavity, forcing the generated oxygen into the dentine. This is followed by removing treatment, washing and drying cavity and repeating operation as may be required to satisfactorily bleach the tooth. Should it be found impossible to remove pigment mechanically with water, a 3 per cent solution of sulphuric acid is used to chemically dissolve it, after which wash with water and let dry, without using hot air preferably. Now burnish a paste made of precipitate calcium phosphate and distilled water into lower third of root, and against all exposed dentine. Make a base for final filling, using light colored cement.

Chemical test for Na_2O_2 —Place about 1 gm. of powder in a

clean, dry test tube and add one or two CC. of water. If chemical is efficient enough oxygen will be generated to kindle a splinter to glowing heat, when held at mouth of tube.

DR. L. W. NEVIUS, Chicago: "The administration of Nitrous Oxide and Extracting Teeth." A demonstration in extracting under gas, using clinician's mouthpiece.

DR. F. W. STEPHAN, Chicago. Demonstration of the Lodge hand matrix.

DR. A. G. JOHNSON, Chicago: Demonstration of enamel cleavage, using clinician's special design of instruments.

DR. J. S. BRIDGES, Chicago: A demonstration in porcelain inlay work.

DR. GEO. W. JOHNSON, Chicago: An exhibition of prosthetic technic work of students of the college.

DR. J. R. WATT, Chicago: An exhibit of crown and bridge technic work of students of the college.

DRS. R. E. COLLINS AND H. E. DAVIS, PH. D., Chicago: Demonstration of some of the most recent methods in bacteriological technique.

DR. C. C. ROGERS, Chicago: A demonstration in physical diagnosis.

DR. GEO. W. COOK, Chicago: A practical demonstration of pyorrhoea treatment.

DR. J. E. HANCOCK, Chicago: An exhibition of gold manipulation in filling.

DR. A. E. MATTESON, Chicago: Filling root canals with gutta percha.

DR. N. J. ROBERTS, Waukegan, Ill.: Demonstration of cocaine anaesthesia in extracting a third molar which had previously been broken off below process line, and other difficult cases, all of which were accomplished painlessly.

DR. GEO. APPEL, Chicago: Insertion of a gold filling.

DR. L. E. CUSTER, Dayton, O.: A demonstration of important details in gold and porcelain crown work and methods of manipulation.

DR. J. A. BULLARD, Chicago: Construction of a porcelain crown.

DR. GEO. W. PITTS, Chicago: A new anchorage for partial dentures. Thin platinum is first burnished around the tooth to be clasped and extending slightly into the sulci. The clasp is fitted

over the platinum, the two waxed together, removed, invested and solder flowed between them and over the platinum projecting between cusps. The idea of clinician being that the platinum may be perfectly adapted to the tooth whereas clasp metal could not be, and that prevention of crowding upon the tissues is prevented by the projections upon occlusal surface.

DR. J. F. F. WALTZ, Decatur, Ill.: Demonstration of the use of the Perry separator, German silver band as matrix, held in place with temporary stopping, and cavities extending well below cervical margins. Cavity filled involved entire mesial and occlusal surfaces with restoration of mesio-buccal and lingual cusps, of superior first molar.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners, to examine applicants for a license to practice dentistry in this State, will be held in Chicago on the thirtieth of April, 1902, and continue four (4) days, at the College of Dentistry (University of Illinois) corner of Harrison and Honore Sts.

Candidates must furnish their own patients, and also come provided with the necessary instruments, rubber dam, and gold, to perform practical operations and such other work as is deemed advisable by the board.

Those desiring to take the examination should matriculate with the secretary ten days before the date of meeting.

The examination fee is \$10.

J. G. REID, D. D. S., *Sec'y*,
1006 Champlain Building,
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THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

HEW TO THE LINE.

The time is now approaching when the annual output of dental graduates is to be launched upon the public. The charge has frequently been made that colleges are not sufficiently discriminating when it comes to the decision as to who shall be graduated and who not, and while these charges are too often made by men who have had little or no practical experience in the preparation of dental students or in judging the qualities which make for or against eligibility, yet the serious nature of the duties of a dental faculty of to-day renders it imperative that no mistakes of leniency be made.

With the question as to the selection of the proper material to be admitted to college in the first instance this article has nothing to do. It is an exceedingly important question, and one worthy the most careful consideration of dental educators the world over. But at this particular time we are more concerned with the immediate protection of the public by a wise discrimination in the matter of determining the qualifications of each applicant for a diploma. The difficulties of doing this with unbiased justice to all concerned and with never failing judgment are not dreamed of by those who have not had long experience as dental educators or who have not studied most carefully the subsequent careers of the different types of men after graduation. It is not by any means wholly a question of ability in a final examination. In fact it would sometimes seem that an ordinary examination was a very inadequate test of a candidate's qualifications to properly serve the public, and in the ultimate analysis of this whole question of judging an applicant's status it should be based solely on whether or not he is equipped in mental and manual ability to do justice to the people who seek his services.

The colleges and the State boards are supposed to stand between the public and that particular form of imposition which

comes from bad service on the part of dental practitioners, and, inasmuch as in many instances the boards accept the decision of the colleges and admit to registration men presenting a college diploma, the responsibility thus thrown on the colleges is a very serious one. In view of this, no man connected with a dental faculty should ever permit himself to think lightly of his obligation. He should study each candidate with the most painstaking discrimination, and not allow personal bias to enter into the case in the slightest degree. It should be a matter with him solely as to whether the applicant is likely or not to serve the public well.

It has probably been too often the case that personal sympathy has induced the members of a faculty to let a man through when there has been some doubt as to his capability. This is natural, it is human nature, and yet in its ultimate results it is often a great wrong. And the significant thing is that the chief wrong is to the individual himself. If he is allowed to begin practice without proper preparation, he is handicapped for life. It is probably within the truth to say that no man was ever yet injured in any essential degree by being rejected and required to go an additional year to college, while it is assuredly just as true that many a man has been seriously and permanently injured by being squeezed through college over that charitable but misleading bridge--the benefit of a doubt. Hew to the line ; it is best for all.

BIOGRAPHICAL SKETCHES.

Beginning in this issue of the DENTAL REVIEW we purpose publishing a series of biographical sketches of prominent men of the past connected with the profession of dentistry, together with their portraits. A sketch will appear each month, and we predict that they will make most interesting reading. They are from the able pen of Dr. Burton L. Thorpe, of St. Louis, who has spent much time and energy in gathering together the necessary data, and who is especially well equipped for the work. Dr. Thorpe brings an enthusiasm into this effort which must make for success so far as a faithful and vivid presentation of the chief characteristics of the leading men of the profession is concerned. We promise a rare treat to our readers, such as is not often afforded them in the pages of dental periodical literature.

THE EDITOR'S DESK.

THE YOUNG PRACTITIONER.

I want to have a heart to heart talk with the young practitioner. I have studied the new recruits to our ranks with some care for years and I am impressed with one thing, that most of our young men fail to live up to their highest possibilities in professional work. Many of them finish their college career minus a penny, and the all absorbing thought is to make some money. This is a perfectly proper thought and a very impelling one. No man is really a success in this world unless he makes enough to keep himself and those dependent upon him in comfortable circumstances. He need not make great wealth to be successful, but he ought at least to be comfortable.

The mistake that many young men make is that they allow the struggle for money to dwarf all professional ambition—as if the legitimate accumulation of money and professional advancement could not go along hand in hand. The two ought to be made supplementary one to the other, and they can be if the young man studies the question from the correct point of view.

The very first thing a young practitioner should do is to connect himself with dental societies. He should seek the acquaintance of older men in the profession who have long been identified with society work, and who are in a position to direct younger men along the proper channels. There is a great deal in getting the true professional spirit early in life, and the young man cannot expect to do this without the example or the guiding hand of older men. It is likely that a feeling of diffidence often prevents a young man from approaching the old wheel-horses. This is a laudable quality but it is in this instance a mistake. The older men are busy, of course, but I do not know of one who will not gladly take under his wing a worthy young man who seeks professional guidance.

Don't wait for a formal introduction to a man you would like to know. Go up to him like a soldier and tell him what you want. And please, please, don't take it hard if you chance to be met with what you feel is scant courtesy. Remember, as I have said, that most of the men you might care to meet in the profession are very much occupied, and at the moment you approach one of them he may be absorbed in so many things that

it is difficult for him to admit a new interest into his consciousness on the instant. His mind may be a thousand miles away, and it may be impossible for him to enter into your case as you think he ought to. But down deep in his heart he is interested in you. I know he is. The reason I know is because I have been a young man myself, and I never yet failed to enlist the interest of older men when I appealed to them in the right way. And another reason I know is because since I quit being a young man myself I have had many a young man come to me for advice, and I know I have always been glad to meet them. I might not have had a great deal of time on my hands at the moment, and it might have been necessary on certain occasions to limit the interview to as brief a space as possible. But I am always glad to see the young men.

And it is this fraternity between the old and the young which most surely leads a recent graduate into professional rectitude and progress. A young man misses much in professional life if he fails to develop the true spirit of professionalism. It is the one thing in practice which really has an intrinsic value aside from money, and the man who has fairly attained to it cannot be said to have made altogether a failure.

LEMAIRE, PATRIOT AND PIONEER SURGEON-DENTIST.

BY BURTON L. THORPE, D. D. S., ST. LOUIS, MO.

The evolution of the science and art of dentistry is second in magnitude to none in the scientific world.

In the onward march of professional progress it is well to review the results accomplished in the past and think of the men who have been the real makers of dental history; they who have made smooth the road we now travel. These men had to overcome the early prejudices of the public and the jealousies of their fellow-practitioners, but by honest endeavor and professional pride they succeeded in placing dentistry in the sphere to which it belongs—lifting it from the vocation of the barber and charlatan tooth-tinker, to that of the honored calling of artist and healer.

The object of this series of historical sketches of the forefathers of dentistry is to give a brief authentic biography of men who have been pathfinders in early days from the birth of the profession down through the years, that we of the present time may have

a clear conception of their environments, their sacrifices, and the great good they accomplished.

The first of the real heroes to be considered is Joseph Jean Francois Lemaire (also spelled LeMair and LeMayeur)—revolutionary patriot and pioneer surgeon-dentist—born at Mayenne, France, 1752.

After completing his studies at the medical school in Paris, he devoted himself to the study of dentistry in that city. The rich red blood of patriotism flowed in his veins and inspired him to come to America with the French fleet, under the command of Count Roch-



JOSEPH JEAN FRANCOIS LEMAIRE.

ambeau, to assist in our struggle for independence. He arrived July 12, 1780, and landed at Newport, where he began surgical and dental practice on this side by working for the officers and others of the allied armies.

Lemaire was an intimate friend of the Marquis de Lafayette, who spoke highly of his ability as a surgeon.

During time of battle he was in the thick of the fight and bravely opposed the British forces. While the American and French armies were in winter quarters in 1781-82 in the vicinity of Providence, Rhode Island, half clad, half fed, and suffering all the aches and

pains the flesh is heir to, incident to neglect and exposure, Joseph Lemaire labored faithfully to relieve his comrades in arms and the residents of the adjoining country of their dental and other pains.

Dr. Horace H. Hayden in an article on early dentistry in the first series of the *American Journal of Dental Science* writes: "The first hints that were afforded or opportunities offered to any person to obtain a knowledge of the profession were, we believe, through Lemaire."

During the winters of 1781-82, Dr. Lemaire tutored two fellow-patriots in the art of dentistry. One, a fellow-countryman, James Gardett, aged twenty-five; the other an American, Josiah Flagg, eighteen years of age, both of whom afterward proved a credit to American dentistry.

After the close of the Revolutionary War he gave instruction to a Mr. Spence and several others. He was the first and original American dental preceptor and his coming marked the commencement of dentistry as a profession in America.

Lemaire's skill tended toward surgical work and his main specialty was the transplanting of teeth, which operation he introduced in America. Record states that he was unsuccessful with this operation during the time of the war, owing no doubt to the poor state of health of his patients, from exposure. In the winter of 1781-82 record farther states Lemaire "transplanted over one hundred teeth and not one succeeded."

At the close of hostilities he went to New York, where he remained but a short time. He located in Philadelphia in 1784 and advertised that "six months previous he had successfully transplanted one hundred and twenty-three teeth" and that he also "carved artificial teeth from blocks of ivory."

Another announcement of Lemaire's reads as follows: "Doctor LEMAIRE, DENTIST, who has been so successful in transplanting of TEETH in New York, proposes to be in Philadelphia the latter end of September, where he will remain some time. The time of his arrival and the place of his abode will be advertised in the Newspaper."—*Pennsylvania Gazette*, September 8-15-22, 1784.

In "Watson's *Annals of Philadelphia*" we find stated—"Dr. Lemaire had great success and went off with much of our *Patrician's* money."

In 1784 Lemaire inserted an advertisement in a Philadelphia newspaper offering "two guineas each for sound teeth to be obtained

from persons disposed to sell their front teeth or any of them." These teeth were used on plates and to be transplanted. It is also recorded that "several respectable ladies had them (their natural teeth) implanted" and they were, in some cases, "two months before they could eat with them."

He practiced in Philadelphia until the fall of 1786 and then went to Baltimore, where he remained in practice a year or more. His former student, James Gardett, writes in the *Philadelphia Medical Recorder* in 1827: "Mr. Lemaire, with the reputation of an eminent dentist, had transplanted one hundred and seventy teeth in this city, in the course of the winter of the years 1785 and 1786, as he told me himself, at Baltimore, in the fall of the last-mentioned year; and that of all those transplanted teeth not one succeeded! Some became firm and lasted, more or less so, for two years, in the sockets in which they had been inserted; but those cases were very rare."

Characteristic of his nationality he was possessed of a genial nature and was regarded by the citizens of Philadelphia as a courteous and cultured gentleman, eminently proficient in his calling.

In 1787 Lemaire returned to his native land and resumed the practice of dentistry at Paris, where he was known as a studious investigator and painstaking workman. It was here he developed his latent talent for writing and contributed some valuable works to the profession's literature.

In 1812 he wrote and published his first work, "The Ladies' Dentist," other editions of which were published in 1818-1824-1833.

In 1816—"A Manual on the Anatomy and Physiology of the Teeth."

In 1821—"A Natural History and Diseases of the Human Teeth"—a translation from the English work of Joseph Fox.

In 1822-24—"A Treatise on Dental Physiology and Pathology."

Some writers have stated that Lemaire was the first practicing dentist in America. This statement is erroneous, owing to the fact that John (Robert) Woofendaie, an English dentist, arrived in 1766 and divided his time between New York and Philadelphia, where he practiced twelve years before Lemaire's coming. There is also record of other dentists about Lemaire's time. Isaac Greenwood of England, located at Boston, and one Whitlock, also from England, arrived and practiced in the New England colonies.

When Lemaire located at Philadelphia in 1784 he found prac-

ting there a dentist of the name of Baker, "the first person ever known as a dentist in Philadelphia." Historical facts are so meager and confusing regarding this matter that it is impossible to tell the exact time each of these early practitioners arrived.

The death of Lemaire occurred at Maisons-Alfort, France, in 1834, and closed a well-rounded career of usefulness. His name will live in dental history as patriot and pioneer surgeon-dentist, whose emigration marks the beginning of dentistry in America.

DOMESTIC CORRESPONDENCE.

AN INCIDENT.

About the year 1836, one Solomon Behrend, a dentist, went from Germany to England, and settled in Manchester. Being a stranger and unknown, a year passed during which he found but little to do. It was a serious question indeed whether he should be able to make a living in his new home.

Then it happened that a certain elderly gentleman came to his office. The dentist did for him what seemed necessary, and charged for his services a moderate fee, after payment of which the man departed without giving his name. As to who he was the dentist had not so much as a surmise.

It came about not long after, that the Duke of Bridgewater, who lived in the city, was with a party of ladies and gentlemen at dinner. When the course of nuts was served and others were using the crackers, the Duke was observed to dispense with that instrument. A lady sitting opposite exclaimed loud enough to be heard by all, "Oh! I should think your Lordship would be afraid of breaking your teeth." "Well, if I should," said the Duke, raising his hand as he spoke, and taking a plate from his mouth, which he displayed before his audience, "If I *should* break my teeth, Mr. Behrend can make me another set."

The next day carriages began to arrive before the door of the impecunious dentist, and very soon he was obliged to employ several assistants in the construction of artificial dentures.

The most aristocratic and wealthy people jostled each other in their effort to secure his services, for which they paid large fees. And the story goes that in time he gathered an estate of at least a hundred thousand pounds.

This comes to me from a nephew of Mr. Behrend, now in Los Angeles, and is no doubt substantially true.

How much of the measure of what men call success depends on trifles after all! If the Duke had used the nut-crackers, if the lady had not been so bold of speech, if His Lordship had not been so extremely frank and open (mouthed), Mr. Behrend might have remained poor, or at least have been content with a modest competence.

GARRETT NEWKIRK.

Los Angeles, Cal., Feb. 20, 1902.

MEMORANDA.

Do not forget the meeting of the Illinois State Dental Society at Springfield in May.

STILL ANOTHER.

This time it hails from New York, and is called *The Dental News*. It is "a monthly magazine for progressive dentists," and is published by the Stowe and Eddy Co. We wish it all success.

IOWA STATE DENTAL SOCIETY.

The annual meeting of the Iowa State Dental Society will be held in Des Moines, May 6, 7, 8, 9, 1902.

All reputable members of the profession are cordially invited to be present.

I. C. BROWNLIE, Secy.

Dr. E. D. Swain, so long identified with the profession in Chicago, but latterly a resident of Seneca Falls, N. Y., where he has been doing something better than filling teeth, spent a few weeks on his old stamping ground this winter. The Colonel is looking particularly well, thanks to his good sense in getting out of doors away from the dental chair before it made an old man of him.

CLINIC OF THE G. V. BLACK DENTAL CLUB.

The annual clinic of this club at St. Paul, February 20, 21, 22, was a most successful affair. The operations were of a uniformly high order, and the papers full of interest. There is no loss of time when those men hold a meeting, and the schedule is followed from start to finish. The papers at the recent meeting will appear in a subsequent issue of the DENTAL REVIEW.

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the annual meeting of the Central Dental Association of Northern New Jersey, held on Saturday evening, February 15, 1902, the election of officers resulted as follows: President, J. W. Fisher, East Orange; vice-president, Wm. H. Pruden, Paterson; secretary, Frederick W. Stevens, 588 Broad Street, Newark; treasurer, Chas. A. Meeker, Newark. Executive committee: C. F. Alfred Hane, Jersey City; C. W. Hoblitzell, Jersey City; F. Edsall Riley Newark; W. Moore Gould, Newark; H. P. Marshall, Newark.

CONNECTICUT STATE DENTAL ASSOCIATION.

The thirty-eighth annual meeting will be held at Hartford Tuesday and Wednesday, May 20, 21, 1902. Every effort is being made to have a large and interesting meeting. At last year's convention over two hundred were present. A larger attendance is expected this year.

Exhibitors desiring space will communicate with Geo. O. McLean, chairman executive committee, Hartford, Conn.

Dr. S. W. McInnis, of Brandon, Manitoba, was in Chicago last month. Dr. McInnis is a member of the Board of Dental Examiners in his province, and is also president of the Dental Society of Western Canada. Besides taking a most active interest in professional matters he enjoys the distinction of being a member of parliament, and during the sessions of the House resides in Winnipeg, where he is rapidly making a reputation as an acute observer of the political questions of the day. It was a government mission which brought him to Chicago.

ILLINOIS STATE DENTAL SOCIETY.

The Illinois State Dental Society will meet in annual session at Springfield, Ill., Tuesday, May 13, and continue three days. Every day something good. Practical papers from practical dentists, practical discussions on practical subjects by practical men, clinics from the extraction of the first deciduous tooth to the most extensive porcelain bridge. Really, a post-graduate course. Every dentist attending will get something of benefit to take home with him.

JAMES W. CORMANY,
Executive Committee.

THE MISSOURI STATE DENTAL ASSOCIATION.

The thirty-eighth annual meeting of the Missouri State Dental Association will be held at Jefferson City, Mo., May 21, 22 and 23. The business meetings of the association will be held in the legislative hall of the State capitol. The clinics being held in the State penitentiary insures an abundance of clinical material. The papers to be read before the association are of a most interesting character. The meeting bids fair to be one of the best ever held in the State. It is certainly to be hoped that with a change in the time of holding the meeting, and many other attractive features, the attendance should be all that could be desired.

INSTITUTE OF DENTAL PEDAGOGICS.

At the close of the ninth annual meeting of the Institute of Dental Pedagogics held at Pittsburg, Pa., December 31, 1901, and January 1 and 2, 1902, the following officers were elected for the ensuing year: President, Hart J. Goslee, Chicago, Ill.; vice-president, J. D. Patterson, Kansas City, Mo. Executive board: W. Earl Willmott, Toronto, (Canada); W. H. Whitslar, Cleveland, Ohio; D. R. Stubblefield, Nashville, Tenn.; master of exhibits, D. M. Cattell, Chicago, Ill.; secretary and treasurer, H. B. Tileston, No. 314 Equitable Building, Louisville, Ky. D. R. Stubblefield was elected on the executive board for the term of three years, to succeed D. M. Cattell, whose term expired. It was decided to hold the next meeting in Chicago, during the holidays.

COMMITTEE ON ART AND INVENTION, ILLINOIS STATE DENTAL SOCIETY.

The committee on Art and Invention, Illinois State Dental Society, hereby invites and solicits a contribution of anything new in the way of appliances and inventions designed during the past year, which will be of interest to the profession in general.

Everything submitted should be sent directly to the undersigned with detailed description of its use and application by April 1, in order that it may receive proper classification and consideration in the presentation of the annual report of the coming meeting in Springfield, May 13 to 16.

The committee will care for and return each article submitted, but reserves the right to reject any, which in their opinion, may not be of practical value.

580 Madison St., Chicago, Ill.

HART J. GOSLEE, Chairman.

THE CENTRAL SOCIETY OF GERMAN DENTISTS.

This Society is to have a convention in Munich early in August. For this occasion the Society of Bavarian Dentists intend to give an exhibition covering the field of practical and scientific dentistry—*anatomy, physiology, pathology, operative and prosthetic dentistry and its history; scientific specimens as well as methods and improvements; didactic means for the teaching of practical dentistry, etc.* Announcements of exhibits must be made not later than July 1, also necessary space given in meters. All appliances must be turned in by July 15.

THE COMMITTEE ON EXHIBITIONS OF THE VEREIN BAIRISCHER
ZAHNAERZTE,

PROF. DR. WALKHOFF,
Munich, Goethe Str. 41.

TREATISE ON SMALLPOX.

A very timely "Treatise on Smallpox," to sell at \$3 is announced for publication early in April by J. B. Lippincott Company. It is written by Dr. George Henry Fox, Professor of Dermatology in the College of Physicians and Surgeons, New York City, with the collaboration of Drs. S. Dana Hubbard, Sigmund Pollitzer, and John H. Huddleston, all of whom are officials of the Health Department, of New York City and have had unusual opportunities for the study and treatment of this disease during the present epidemic.

The work is to be in atlas form, similar to Fox's Photographic Atlas of Skin Diseases, published by the same house. A strong feature of the work will be its illustrations, reproduced from recent photographs, the major portion of which will be so colored as to give a very faithful representation of typical cases of variola in the successive stages of the disease, also unusual phases of variola, vaccinia, varicella, and diseases with which smallpox is liable to be confounded. These illustrations number thirty-seven and will be grouped into ten colored plates, $9\frac{1}{2} \times 10\frac{1}{4}$ inches, and six black and white photographic plates.

The names of Dr. Fox and his associates assure the excellence of the work, in which will be described the symptoms, course of the disease, characteristic points of diagnosis, and most approved methods of treatment.

EASTERN INDIANA DENTAL ASSOCIATION.

SHELBYVILLE, MAY 14, 15, 1902.

President, Dr. J. R. Clayton, Shelbyville, Ind.; vice-president, H. C. Sexton, Shelbyville, Ind.; secretary and treasurer, A. T. White, New Castle, Ind. Executive committee: W. E. Blackburn, Shelbyville, Ind.; J. H. Morrison, Connerville, Ind.; N. W. Hiatt, Marion, Ind.

THE DENTAL SOCIETY OF THE STATE OF NEW YORK.

The thirty-fourth annual meeting of the New York State Dental Society will be held Wednesday and Thursday, May 14 and 15, 1902, in the Assembly Hall, Hotel Ten-Eyck, Albany, N. Y. The following essayists will present papers on subjects to be announced:

S. S. Stowell, D. D. S., Pittsfield, Mass.; R. H. Hofheinz, D. D. S., Rochester, N. Y.; W. V-B. Ames, D. D. S., Chicago, Ill.; Leo Greenbaum, D. D. S., Philadelphia, Pa.; Joseph Head, D. D. S., Philadelphia, Pa.; A. E. Webster, M. D., D. D. S., L. D. S., Toronto, Ont.; W. H. G. Logan, D. D. S., Chicago, Ill.; H. D. Hatch, D. D. S., New York; A. R. Cooke, D. D. S., Syracuse, N. Y.

Members of the profession are cordially invited to attend. Headquarters Hotel Ten-Eyck. Special rates \$3.50 per day.

JOHN I. HART, D. D. S., *President*.

W. A. WHITE, D. D. S., *Sec'y*, Phelps, N. Y.

SOMETHING ABOUT ASBESTOS.

For fifty years I have had occasion to use asbestos. For forty years I had procured my supply from one house—a short, coarse fiber such as is the grade needed for continuous gum work, and for which I paid 37 cents per pound.

About ten years ago the supply of this material failed and no more could be found. I hunted through New York City for some but there was nothing better to be found than the long, silky fiber, the worst thing to mix with plaster imaginable.

About a year later I found an asbestos store in Chicago dealing in an article the very best I have ever seen for dental use. I used to buy it in five pound lots, and took pains to call the attention of dental supply houses to the article, but they did not avail themselves of it.

Alas, I found on my return from Europe in 1900 that the store had been sold out, but by diligent search ascertained that the same article could be had in Milwaukee, so ordered 100 pounds, turning over part of it to H. D. Justi's concern where it can now be had, and at much lower price than the old time rate.

L. P. HASKELL.

RECENT PATENTS OF INTEREST TO DENTISTS.

691,092. Former for air-chambers for dental plates, Louis Arndt, Jersey City, N. J.

691,187. Switch mechanism for electric motors, Adolph W. Schramm, Philadelphia, Pa., assignor to Electro Dental Manufacturing Company, Camden, N. J.

691,188. Means for regulating electric motors, Adolph W. Schramm, Philadelphia, Pa., assignor to Electro Dental Manufacturing Company, Camden, N. J.

691,694. Dental pliers, Adolph, J. and H. Aderer, New York, N. Y.

691,695. Case for dental instruments, Adolph, J. and H. Aderer, New York, N. Y.

691,581. Dental floss holder, Auguste Baumeister, Hagenau, Germany.

691,550. Mount for diatoric teeth, Henry M. Justi, assignor to H. D. Justi & Son, Philadelphia, Pa.

691,753. Handpiece for dental engines, Frederick W. Dean, Des Moines, Iowa.

691,763. Dental instrument, Wm. E. Harper, Chicago, Ill.

35,610. Design, dental instrument holder, James B. Vernon, Paola, Kan.

692,281. Dental mouth prop and mirror, Wm. Hare, Augusta, Ill.

692,294. Dental lamp, Herman J. Jaeger, New York, N. Y.

692,708. Toothbrush and powder cabinet, Corwin T. Price, Washington, D. C.

692,713. Dental mandrel, Bernard Robinson, Philadelphia, Pa.

692,582. Dental instrument, Newton T. Yager, Louisville, Ky.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

THE DENTAL REVIEW.

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CHICAGO, APRIL 15, 1902.

No. 4

ORIGINAL COMMUNICATIONS.

LOCAL ANESTHETICS.*

BY ELGIN MAWHINNEY, D. D. S., CHICAGO, ILL.

Local anesthetics are agents that are used for the purpose of producing loss of sensation in the part to which they are applied. If they were devoid of any other action their use would indeed be simple, and a great blessing to mankind, but unfortunately all agents that are of any marked value for such purposes possess other powers which often endanger life.

Cocaine is the substance probably first used. Its power to produce local anesthesia was recognized as early as 1860, but it was not until 1884, when Dr. Kohler, of Vienna, performed a most remarkable series of experiments, that the attention of the profession was directed to it, since which time men all over the world have been studying this substance. It is probably true that no agent in our materia medica has called forth the amount of conjecture, experimentation and research in the last fifteen years that this has.

Ever since this drug was first known men recognized that it produced other than local effects upon the system and that these effects are exceedingly dangerous to life. To know just what these effects are, how they operate, and what can be done to annul or prevent them, has been the object of all this study. For some time I have had a feeling that the dental profession was not getting the greatest possible good out of the use of this drug, many being fearful of its toxic effects, many more using it with poor results, and still another large percentage of reputable dentists having given it up in favor of some one of the hundred preparations on the market which claim to be just as good and contain no cocaine. The falsity of this statement is misleading many. And here I wish to enter my protest

*Read before the Odontographic Society, Chicago, Ill.

and a word of warning against the use of any compound the *contents of which you do not know*. It is not true at the present time to say any other substance known possesses as good local anesthetic effects as *cocaine*. It is far superior to all others, and as a matter of fact all these preparations that I have tested depend upon cocaine for their efficiency, and the great danger is in our using cocaine without knowing it, for when we know we can at least be on our guard and prepared for emergencies.

No sooner was the chemical nature of this drug half understood than the physiological chemist set about to produce a substance synthetically that would have its local action without its ill effects upon the system. As the result, eucaine and, later, chloretone were given us. The same effort was made regarding atropine, resulting in homatropin, by a different process, however. That the results in these cases have been very *unsatisfactory* I believe to be true. For a time eucaine, especially the beta, seemed to fill the place of cocaine fairly well, but as time goes on and men are using local anesthetics more and more and learning to rely on them for trying, difficult minor operations, it is being abandoned in favor of cocaine hydrochlorate. Chloretone has practically had the same history, although it is in no way dangerous to life. For the purpose of seeing if my personal experience in this regard was uncommon, I instituted a system of inquiry among oculists, rhinologists, aurists and dentists in this city, and to some extent outside, and as a result I find the above statement true and that a large majority of operators everywhere have gone back to the cocaine hydrochlorate.

No matter what laboratory experiments may at times seem to prove, the fact remains, we have no other substance that will produce anesthesia of the tissues upon which we operate, as well as this substance. I am willing to admit that it has slightly *greater* toxic effects than eucaine, but it is so much more potent as a local anesthetic in the mouth as to require a much smaller quantity to produce desired results, so that I find clearly a net balance in its favor. This statement is made after a careful study, both in the operating room and experimental laboratory, extending over a period of ten years.

As a preparation for the writing of this paper I undertook an extended series of experiments during part of which I have been assisted by Dr. G. W. Cook. I think, perhaps, we may have cleared up at least a few points. Our work is not yet completed, and I only give results as far as we have finished.

Series No. 1. These were undertaken for the purpose of ascertaining the relative toxicity of the various cocaines put upon the market by different manufacturers. After some preliminary work to determine the dose required to bring out the full physiological effect we selected guinea pigs of the same age and weight, to do which I assure you was no small task. Only such pigs and rabbits as met this requirement were used in comparative tests. Here is as good a place as any for me to add that the "personal equation" or peculiarities of individual organisms of these pigs and rabbits so far as the action of cocaine is concerned is practically nothing, which we demonstrated to our entire satisfaction. In this they differ very markedly from the dog, or man. Indeed, this is the one drawback; in man we cannot tell who are most or least susceptible. In the first series we used seven different cocaines in exactly the same per cent solution and made injections of various amounts, using a fresh pig for each injection, until we arrived at the *exact* least amount required to produce death with each preparation. Then with the least amount we made comparative tests, watching everything in the minutest detail, heart, lungs, kidneys, mucous membranes, and as a result we found all of the seven possessed the same toxic properties in the same degree. Each step in the progress of the action was practically identical both as to symptoms and time, with one exception, which took almost twice the length of time in producing each stage; otherwise identical. These were repeated sufficiently often to prove conclusively that these seven different "makes" of cocaine are identical so far as toxic properties are concerned.

Series No. 2. These were undertaken to find out what substance or substances, either combined with cocaine solutions or administered separately, would reduce these toxic symptoms to a minimum. The drugs used were morphine, caffeine, strychnine, atrophine and nitroglycerine. We used them in all sorts of conceivable combinations and alone, in all sorts of doses, and as a result we have to recommend the use of nitroglycerine, either given along with the cocaine or two minutes before. It is of benefit and the best agent to use when toxic symptoms arise, but if given before or with cocaine almost one-half more can be used with safety. Indeed, on the rabbits we were able to give two times the toxic dose and yet resuscitate them with nitroglycerine.

One of the very noticeable things I observe in looking over our records is the rapidity of recovery after the danger point is passed

when nitroglycerine is used. Indeed, several cases pronounced dead by Dr. Cook I succeeded in bringing to complete recovery in six minutes, with this agent, and in addition gave large quantities of normal salt solution by injection into the peritoneal cavity. This suggests the value of the use of normal salt solutions to aid in the elimination of the cocaine. If you can keep the life forces working for five or six minutes after the normal salt injection is made, your case will recover rapidly on account of the rapid elimination which that solution brings about, mostly by way of the kidneys. Allow me here to suggest that this solution will be of great value in eliminating any poison introduced from without or developed within the body. Another noticeable thing about the action of nitroglycerine in these cases was stimulation of secretions of the mucous membranes. One of the first symptoms of cocaine poisoning is dryness of the mucous membranes, but when nitroglycerine is used saliva and other secretions flow freely.

In *Series No. 3* we tried to demonstrate the relative anesthetic powers of the various cocaines. This is a very difficult thing to do. It is so difficult to know in the lower animals just how much or to what extent absence of sensation in a part is due to local and how much to general anesthesia, and many of our experiments had to be made on man. We have been working at this series for several years as time and opportunity would permit, and while we do not feel convinced on this point as yet, still I feel that the difference is very slight. Some points that I have cleared up in this, however, are interesting; one is the fact that cocaine *anesthesia* only affects pain sensations, not heat or cold, sweet or sour, etc., to any perceptible extent.

Series No. 4. This was to find out if possible what agents could be used to augment the local anesthetic effects of cocaine. This series is likewise not complete, but we have proved to my satisfaction that certain of the essential oils do aid it if used in *weak* solutions, notably oil of cloves and oil of peppermint, and also menthol. All of the substances have the power of penetrating protoplasm to a marked degree and if not used so concentrated as to be irritant they will prove of value in carrying the cocaine into protoplasm as well, and inasmuch as cocaine produces its local effects by action on protoplasm it would seem that they would be of special value. Several other substances look promising, of which I cannot report at this time.

A few words as to the action of cocaine in general as determined by most recent investigations may be of interest. Large doses act about as follows:

First, as to outward symptoms. They vary considerably in different individuals, but generally we have first some little excitement, restlessness, talking more than usual, anxiety, confusion; the pulse is accelerated, respiration quick and deep, pupil of eye frequently dilated, dryness of throat and mouth, reflexes slightly increased at first, oscillation of head, slight convulsions, later clonic convulsions, head drawn back, muscular incoördination, pulse extremely accelerated, rapid, catchy breathing, finally arrested during convulsions. Heart beat rapid and full at first, grows more rapid and soon loses force, and many times beats fairly well until sudden stop. Other cases, respiration slow and weak and heart slow and depressed, just gradually declines until death from failure of respiration.

In small quantities it increases the higher functions of the cerebrum, as shown by the garrulity. Indeed, all of the symptoms from a small dose point to action on the cerebrum, but as the dose increases, the effects produced seem to come from the central axis and on down to the spinal cord, first stimulation and then depression following downward.

By central stimulation respiration is increased, but as progress is made, less and less air is inspired and during convulsions the respirations temporarily cease, then recover and another convulsion, cease again and finally stop.

Cocaine acts directly upon the heart and stimulation occurs from action on the acceleration mechanism, or direct on the muscles of the heart. The blood vessels first become contracted and blood pressure rises, due to stimulation of the vaso constrictor center. Blood pressure soon *falls* from peripheral action.

Local action is due to paralysis of the terminal sensory nerves, brought about through protoplasmic irritation, which results in constriction of the vessels, and anemia of the part. Cocaine doubtless has a selective affinity for protoplasm of the sensory nerve cells and our success with it entirely depends on our ability to bring it in contact with the nerve terminations and little bundles of nerve fibers within the tissue itself, and also to aid by mechanically filling the tissue with our solution, and in shutting off the blood supply. This is indeed very important. Hence it follows that 10 m. of a 2%

solution confined within a given area will be more efficient than 5 m. of a 4% solution.

A series of experiments was conducted with Parke, Davis & Co.'s 4% cocaine in chloretone, resulting in raising it very markedly in our esteem. We found rabbits would withstand one-fourth larger doses than when their 4% without chloretone was used, and a remarkable thing about it was that they retained the use of the hind limbs long after they lost complete control of the front ones, and the mucous membranes remained moist—just the very opposite from the effect of cocaine alone. The toxic symptoms were much slower in coming on and resuscitation much easier and more rapid. When death occurred the rigidity of the muscles was absent. Cases responded beautifully to nitroglycerine, and as an anesthetic it proved to be similar to a 4% straight, with the advantage that more can safely be used.

About three years ago my attention was called to a preparation put on the market by Drs. L. O. and O. W. Green. The remarkable success many are having with its use brought many requests for some laboratory experiments, which we undertook. The preparation is known as *Acestoria*, and is a 1% solution of cocaine in essential oil water to which is added nitroglycerine. The exact formula I did not have until to-day. We found it took nearly double the cocaine in this mixture to produce toxic symptoms as when 4% cocaine hydrochlorate alone was used, that is to say, 12 m. of *aces-toria* being a 1% solution, would be equal in amount of cocaine to 3 m. of a 4% solution of cocaine alone. We found it took 20 m. of this solution to produce any toxic symptoms and then there was very little about those symptoms that resembled those of a toxic dose of cocaine. First, it took fifteen minutes to produce any noticeable effects, whereas cocaine alone affects in one minute. These were the symptoms as they developed: Extreme excitement, deep, full breathing, no perceptible change in pulse, no muscular rigidity, acted as if he were drunk, eyelids drooped and seemed blind, although he seemed conscious. Lost perfect use of the front legs, but retained perfect control of the hind legs. Extreme excitement, muscular tremors, then stupor, then again extreme excitement, staggers around like mad, then stupor again, limbs become cold and finally deep coma and death. These experiments were repeated until we were certain the above was typical. The effects produced, as you will readily see by the symptoms, do not resemble cocaine poi-

soning. So we set about to try to produce these symptoms by other agents and succeeded fairly well with atropine, but not perfectly. Since getting the exact formula the matter seems clear, as you notice it contains an amount of hyoscyamus, which doubtless produced the above symptoms and not the cocaine at all. I would like to recommend to the manufacturers the reduction of the amount of that drug in this preparation. I have been using this preparation in a clinical way for the past three years with highly gratifying results. I succeed in obtaining better local anesthesia than with any other combination used, and although I have used as much as 40 m. at once I have never seen the least alarming symptoms. The manufacturers furnished me with a list of those using it regularly from which I selected the names of fifty reputable men from different sections of the country and here I have their correspondence, some of whom have used it for six years and as much as one bottle a month, and from none is there a word of complaint of its toxic effects, and all claim to get satisfactory results. I am glad to recommend the preparation to the profession. First, because I believe it will accomplish the result desired with the least possible danger. And, second, because it is a clean antiseptic solution and will not produce slough or otherwise irritate the tissues. This I have abundantly proven. Third, because of the manner in which it is prepared regarding sterilization, etc. Fourth, because it will not deteriorate but will keep perfectly for at least two years, in any climate. And fifth, because it is the product of a practicing, ethical dentist, is nonsecret, and is sold strictly on its merits. This preparation is not only of value for extracting useless teeth but works as well in all minor surgical operations, such as removal of cysts and tumors about the mouth, aiding the proper scaling of teeth, and like operations. I find it is also being used by many surgeons in their minor operations. I want to recommend the advisability of printing on the label the exact formula that all may know exactly what it contains without having to refer to anything else. I do not wish to be understood as saying that any preparation will do away with all pain in all cases. Much depends on how it is used as well as the condition of the tissue we use it upon. We must be able to force it into the tissue under pressure in such a way as to confine it there for a sufficient length of time. This is important. We must use a clean, sterilized syringe, I prefer one of all metal which can be boiled, and use enough of it. And lastly, we must have confidence in what we are doing and understand what

to do in an emergency ; keep our nitroglycerine ready for instant use. Remembering always that many of the symptoms seen in our clinical cases are the result of hysteria more than the effect of cocaine.

• DEFORMITIES OF THE SUPERIOR MAXILLA.

BY C. H. KOHLER, M. D., MINNEAPOLIS, MINN.

I presume the dentist of to-day, who works to attain ideal results, has no more unsatisfactory nor troublesome conditions to contend with than the correction of certain deformities or irregularities of the upper jaw, and I think I am safe in saying that when one considers the vast progress made in dentistry, within the past few years, that this same condition comes nearer being at a stand-still than almost any other of the usual conditions for which relief is sought. Naturally then, it is a condition that is of great importance to the dentist and you probably all know that in a different sense, it is of as much, or more importance to the nose and throat specialist, so that our efforts for progression are naturally in common, though we work along different lines.

It has been my good fortune for the past ten years to be rather intimately associated with a number of the prominent men in your profession, which has enabled me to give this matter much satisfactory investigation. At first I naturally fell in with the dentists' idea of the causes of the deformities of the superior maxilla, but it was not long in my personal experience with these conditions, before I began to doubt your deductions and conclusions.

In what I have to say here, I make a radical departure from anything I have been able to learn from your text-books, or what seems to be the prevalent idea of the dental profession, in that, to my knowledge, we have had only general or disconnected statements in which some one of the causes which I shall give you, have been suggested as responsible for maxillary deformities. There has been no attempt at rational or systematic classification or the necessary elaboration on the causes as given here. The matter has been treated very exhaustively from other points of view and my remarks therefore apply only to the discussion of these causes as presented by me, in this paper. I shall attempt, in brief, to cover every part of the question having a causative bearing on the matter under discussion.

We will agree that in this, as in matters of a like nature, it is

*Read before the Minnesota State Dental Association.

necessary to properly understand the cause in order to determine upon the necessary ways and means to obtain the desired effect, and here is where we seem to differ, for I contend that defective breathing, which has for many years been considered only an ultimate effect, is in reality the prime factor—the direct essential cause of these deformities. I have looked up this matter in every available text-book and I have noticed that defective breathing has been spoken of incidentally, but with so little reference or with such brevity that its importance would naturally be considered of a secondary nature. I believe that many causes of deformities and irregularities as given in your text-books are responsible largely for these conditions, but *only indirectly* and that they first cause abnormal conditions of the nose, which are secondarily followed by maxillary deformities. You are all so familiar with these causes, such as malnutrition, too early or too long retention of the temporary teeth, thumb-sucking, improper pressure of the lips and tongue; the different constitutional causes, like gouty, strumous, syphilitic and other diatheses; crowding of the teeth, etc., which are covered so fully in Dr. Talbot's book on "Irregularities."

These I will not dwell upon now, for they concern us only in an indirect way, which I shall take up later, and many of them are effects and not causes. I contend that first and foremost of all causes, and the only one which we need to consider for all *practical* purposes is *mouth breathing*, and in looking for a practical solution of the problem for correcting these difficulties, the main consideration will be the conditions that directly and indirectly are responsible for *defective breathing*. These I mean to emphasize in this paper, in accordance with their relative value as causative factors.

Defective breathing is caused by one or more of three conditions, which should be divided into two classes—the direct and indirect. The direct are: first, deflection of the nasal septum; second, adenoids and enlarged tonsils; third, hypertrophy of the soft tissues of the nose. Did none of these conditions exist, it is my opinion that the dentist would rarely see a "V-shaped" or "saddle-shaped" vault, for in ten years of private practice and the hundreds of cases I have seen in clinics, I have never seen a faulty vault in which one or both of these conditions did not exist, and I hope to show you that this is the cause and not the effect.

Of the three causes mentioned above, adenoids and deviation of the septum are of the greatest importance, and it is my opinion that

the majority of the severest forms of constricted vault have their primary origin from deviations of the septum. This condition begins very early in life, and generally results from falls on the nose. As soon as children are able to crawl or walk, more or less severe bumps on the nose are of frequent occurrence. If a blow is of sufficient force, some part of the cartilage is likely to yield by deviating to one or the other side, and the growth of the child develops this deviation in its unnatural lines.

If this proves to be a marked deviation, trouble arises from two sources: first, by its tendency to develop hypertrophic tissue in the nose, or adenoids in the naso-pharynx, or if the amount of deviation be sufficient to limit greatly the space in one or both sides of the nose, the breathing becomes defective from these perverted influences: and secondly, the hard palate loses its natural support from above, and when the mouth breathing begins, we have necessarily the dropping of the lower jaw, the pressure of the cheeks on the alveoli, displacement of the tongue, elevation and retraction of the upper lip, etc. Thus the constriction of the upper jaw begins, and it goes on till the eruption of the permanent teeth with insufficient room in the unnaturally small space allotted to them, by their pressure, aid in causing the different varieties of constricted vault, and to some extent, the irregularities.

In the second class of direct causes, we consider adenoids, enlarged tonsils and nasal hypertrophies as one, because they all cause trouble in the same way, by obstructing the normal air passages and thus make mouth breathing imperative, differing only from the first class in that the hard palate has its normal support from the septum.

The indirect or constitutional causes are of importance only in so far as they bring about the conditions just enumerated under the head of direct causes. In other words, if, for instance, a child is born with a strumous or syphilitic diathesis, or is idiotic, certain tissues as a result develop excessively; the tonsils enlarge, adenoids or hypertrophy in the nose develop, because it is this very tissue which, being of an inferior quality, takes the place of the normal tissue, and makes the child one of lessened vitality and inherent weaknesses. The nares as a result, become occluded, mouth breathing supervenes and here we pass into the first class, or direct causes. Or, in instances of this type, where there is already slightly defective breathing in a boy or girl who has passed the age of infancy and a fall or blow on the nose of considerable force, bends the still yielding tissues

of the septum and thus such an accident at once throws this patient in the first or more serious class where the resistance of the septum is gone. These conditions arise generally previous to the tenth year, and the child who lives to this age and breathes properly, rarely has an irregularity or deformity of even a reasonably marked degree, except possibly as the result of an accident. This, in my opinion, if I can substantiate my position, is the best proof I can offer you that defective breathing precedes most decidedly any other etiological factor, except constitutional tendencies, and that the other causes enumerated, such as crowding of the teeth, are entirely secondary. My belief for this I shall now go into a little more fully. In your text-books much emphasis is given constitutional causes, such as malnutrition and the inherited tendencies, and it is covered so ably and exhaustively in Dr. Talbot's work, that I do not speak of it here except as necessary to bring before you clearly the bearing these causes have on defective breathing, for I consider them of importance only in so far as they cause disturbances in the nose. For instance, in statistics carefully gathered from about fifty institutions of the deaf, dumb, blind, feeble-minded and insane asylums, located in this country and in Europe, we find that 60 per cent of the inmates have some deformity or irregularity of the upper jaw, but that 80 per cent in institutions of this kind have one or more of the conditions which cause defective breathing. This means simply that where any condition of degeneration exists, resulting in blindness, deafness, mutism, idiocy, etc., the very reason for this degeneracy exists in the weakened defective tissues in some spot, which in the nose or throat develops into adenoids or other nasal obstruction, and we have defective breathing as a consequence. In proof of this you will find that the lower animals or the savage races have these deformities only in a very small degree, the reason being largely constitutional. In the first place their general nutrition is very much better, and secondly, they have few of the inherited tendencies to which I have referred. In any race, no matter how enlightened or savage, where you find decided constitutional disturbances, you will find deformity of the teeth and vault, but you will also find, preceding the deformity, one or more of the three principal nasal deformities to which I have referred.

Among idiots, deformities are so common that we have a typical idiotic face, due almost entirely to the condition we find in mouth breathing. Add to the dropping of the lower jaw and separated lips,

a slight drooping of the eyelids, and we have the expression commonly called idiotic. Now if we follow this condition to its incipient stage, we find a history of some constitutional taint of the child's immediate or distant ancestors. The child in utero, in its embryonic state, develops from the first under adverse conditions and tissue in one or more parts of the body is of an inferior quality and lacks normal vitality. It is a physiological fact that tissue in one organ can come to full structural and functional perfection and yet other tissue or organs in the same body remain undeveloped. This same tissue we speak of as abnormally nonresistive to disease because it has not attained its maturity or has undergone a retrogression, temporary or permanent (Clouston). The connective tissue cell and fiber, and a fat cell are probably organically perfect at birth and in infancy and early youth show the greatest tendency of any of the tissues to cell proliferation. It is this tissue which constitutes the adenoid or enlarged tonsil and you see now why it develops excessively, under the slightest cause. On the other hand, the higher tissues, like the brain cortex, attain maturity and perfection last. Sometimes this lower tissue takes the place of a higher grade, or the higher quality suffers retrogression, so that if some vital spot in the brain is affected we have some defect in the special senses, or if the condition is general throughout the brain, we have imbecility. If the spinal cord be affected we have a faulty development of some part of the body, or a lack of coördination, and some spinal disease becomes manifest. If the defect be of a general nature, affecting more or less all the tissues of the body, idiocy is the result; or, if the tendency be less marked we have what we generally understand by scrofula, or a gouty or syphilitic or other diathesis, or possibly only a lymphatic temperament. But whether it be of a slight or great degree, the quality of the tissue is at fault and wherever the quality of the tissue is below the normal, the tendency is increased for the development of adenoids, enlarged tonsils and polyps and other hypertrophies of the nose. This means that where you find the constitutional defect, you also find coëxisting, the abnormal tissues in the nose or nasopharynx, which cause defective breathing, and that these conditions become apparent *for months and even years* before you find any change in the upper jaw of an abnormal nature. Adenoids become apparent at times, practically at birth, and I have removed large masses in children from one to two years old. It is occasionally necessary to remove enlarged tonsils as early as the first or second

year, and as I told you before, deviation of the septum often results from a fall so early in infancy that the patient, when grown up, has no recollection of any injury. *On the other hand it is very rare to see a faulty vault under five years and generally it does not begin to show much before the eighth or ninth year.* Now, if a constitutional tendency or a weakened tissue predisposes one to these nasal disturbances and these disturbances precede deformities of the vault or teeth, what can be more rational than to first do everything within our means to improve the condition of the tissue, by checking or eradicating the constitutional weakness, and then, if this can or cannot be done, correct the difficulties of respiration which predispose to and precede maxillary deformities, and *lastly* resort to mechanical means necessary for the correction of the teeth?

Another phase of this question is noted by certain nerve specialists who assert that the "V" and "saddle-shaped" vaults tend to increase or even develop a mental effect by limiting the cranial capacity. That, in other words, as the vault becomes constricted, the pressure on the vomer becomes so great that the cranial bones contiguous with it are forced higher in the cranial vault and this constricts its contents.

I have a case in mind now of a young man of twenty, who, without apparent reason, brutally murdered his employer. The murderer gave no particular reason for the deed, did not seem to realize that he had done anything wrong and seemed wholly indifferent, when told that he might be hung for his crime. A plea of insanity seemed justifiable and was entered by the defense. In the trial, medical experts first brought out a history of insanity in several ancestors, and then showed by certain measurements that an extremely high vault and a resisting septum pushed the inferior wall of the cranium high up into the cranial vault and so retarded the development of the brain; that a slight form of dementia had always existed but was being increased gradually by this pressure which was likely to continue to radical insanity. This impressed the jury so favorably that he was not held accountable for the murder, but was sent to the Fergus Falls Insane Asylum and within a year was one of the most dangerous and unmanageable maniacs in the hospital. Two of the experts, Drs. Williamson, of Minneapolis, and Riggs, of St. Paul, believed that this youth promised well in early life, and might have been saved from his unnatural end if the conditions in the nose and jaw could have been corrected soon enough. I refer to this case as

being one of a good many, in some of which these conclusions were substantiated later by a post mortem examination, and the limited cranial vault actually found. Now, while this is an extreme condition and probably seldom met with, it should teach us that if it has only a slight effect in many cases in retarding the cranial development, it is a matter of such vast importance that we cannot afford to overlook it.

You see, therefore, that the patient suffers in two radically different ways, so that if the septum is straight, there is likely to be damaging pressure in the brain, or, if it deviates, the breathing becomes defective from causes already stated. In this same connection I wish to speak of two other conditions having a strong bearing on this matter, these being the anatomical changes which evolution seems to be bringing about. I have noticed in your text-books the statement by different writers that the jaws of people to-day, appear to be much smaller than those of our ancestors. If this is true, it may account for the crowding of the teeth and the irregularities in general. Another odd explanation for the existence of so many deflections of the septum is in the same line. Probably I should state before going any further, that a perfectly straight septum rarely exists and that practically everybody has some slight deviation or, if not really a deviation, a cartilaginous or osseous projection on one or both sides. The explanation I have in mind is from Zuckerkandel, one of the most eminent anatomists of to-day, who believes that in the past our ancestors had much larger and more roomy noses. In the process of evolution, as we became more and more civilized, the space of the vomer and ethmoid have become less and less, while the bones themselves have remained the same now as in the past, and therefore, being too large for the space allotted to them, something has to yield, and we have the deviations spoken of, or the increased pressure on the cranial bone. I rather laughed at the idea, when it first came to me but last summer, while in Vienna, the home of Prof. Zuckerkandel, I had an opportunity, through a mutual friend, to see several hundred specimens, which, after studying them carefully, made his explanation seem very plausible.

Another condition worth some consideration is the effect that ossification has on the maxilla in these cases of perverted development. Very little is said in our text-books on anatomy, on the centers of development, except, possibly, that which includes the four incisors. This is the last one to become ossified to the palate process

and its junction to the line of molars is the last stage in the final development. For this reason, when the molar process becomes fixed the front teeth must, to a certain extent, find space as best they can so that where a narrowing of the diameter between the molars exists the room for the incisors is limited and their growth, then, is naturally in a forward direction. The retraction of the upper lip removes the natural pressure from the front and thus intensifies the unnatural development. This condition absolutely never exists where defective breathing is not present. I have made this statement many times to a number of my friends in your profession in discussing or investigating these conditions, who did not wholly agree with me, but they have yet to show me an exception to this statement, and, traced to its earliest source, it is not possible to find that mouth breathing does not precede any other causative factor which results in a deformity of the teeth.

Before going into a few conclusions, I wish to give you a brief résumé of all that I have said above, which I think is made very simple by the table shown on following page.

Now, if my conclusions are wholly or even in a measure true, think of the people who are permanently injured by not having everything done within the power of the dentist, or the nose and throat or other specialist, in correcting these deformities; and, not alone the physical injury, but the unsightly physiognomies resulting therefrom. It seems to me therefore, that a radical mistake is made when all these causes are not taken into consideration, but you mistake me if you think that I lay the blame for this at the door of the dentist. The first mistake is made by the family physician who allows this to escape his notice long before the dentist or the nose and throat specialist has anything to do with the patient, but I think the dentist is at fault and does the patient possibly an irreparable injury when he considers that his work is all that is necessary and does not know, or if he knows, neglects the other conditions present which must be corrected before an ideal result is possible. My position, as I said before, is a departure from that of your profession, so that my purpose in bringing this to your attention is to give you the result of my investigation, and if I have said anything unknown to you on this subject, to set you to thinking along these lines, and also to learn something from you by having brought out the points where I err in my conclusions. Your text-books, and I judge therefrom, your teachers, devote everything in the nature of treatment to mechanical

means. This appears to me wrong, even from your own conclusions, because where a constitutional defect exists this must first be corrected, or at any rate improved, to attain a satisfactory result and, if

Intense cold, Rapid change of tempera- ture. 1 1	Improper clothing or general lack of care of the body 1 1	Malnutrition, Lymphatic Temperament, Blindness, Mutism, Deafness, Neurotic Tendencies, Strumous, Syphilitic and other diatheses, Imbecility, Idiocy. 1 1	
Climate. 1 1	Hygiene. 1 1	Constitutional weakness. 1 1	
	1 1 Adenoids Enlarged Tonsils Nasal Hypertrophies. 1 1		Injury 1 Excessive size of vomer and ethmoid. 1
			Deviation of the septum. 1 1
		1 1 1 MOUTH BREATHING 1 1	
1			1
		Dropping of lower jaw, Excessive pressure of cheeks on alveoli. Elevated and retracted upper lip. Displacement of tongue from superior maxilla. Contraction of nasal fossa. Contraction of upper jaw.	
	1 1 1		1 1 1
Typical.	Atypical Deformities.		Excessive pressure on septum.
1 1	1 1		1 1
"V" or "Saddle- shaped" vault.	Irregularities.		Deviation of septum or pressure on base of brain.

my position is in the main correct as to the direct causative factors, you are doubly wrong by devoting your time to a correction of the defect by treating the effect and ignoring the cause, when that cause makes your mechanical efforts practically futile, while a correction

of the cause would in itself arrest the progress of the deformity and make your treatment much more simple and effective. I believe that the removal of the cause, which I deem the defective breathing, will do more for the correction of the deformity of the jaw, unaided by mechanical means, than you can do by any mechanical means unaided by a removal of what I deem the cause. But, used together, we have the most certain means for obtaining the most perfect results, and in this statement you have the sum and substance of all that I have said or all I mean to say. In other words, my idea is that when these cases come to the dentist he should, first of all, carefully look into the breathing condition and if any defect exists send them to a nose and throat specialist and have any defect treated coincidentally with his work on the teeth; or, if some general condition, like malnutrition or other constitutional troubles be present and the breathing appears natural, they should first be referred to a physician for the necessary general treatment. On the other hand, when they go to the nose and throat specialist first, to do as has been my practice for a good many years, to send them to the dentist and have his coöperation in effecting the desired result.

It was my intention when I first began this paper, to devote a part of it to some of my cases, of which I have models in plaster of Paris, which would serve as most positive proof of the position I take, but it was my impression later that it would take up time that I could use to better advantage otherwise, for I soon found trouble in keeping this within its proper limit. And, therefore, while my position seems radical and I have seemed very positive in some of my statements, I have verified my conclusions so thoroughly to my own satisfaction that I am led to believe that the same amount of investigation, in my branch of the work, will inevitably lead you to a similar conclusion.

The time for a paper of this kind is necessarily so brief that many important conditions have barely been touched upon, which, with the elaboration they should have for proper presentation, would, in themselves, make a paper of greater length than I have taken for the entire subject.

A BRIEF CONSIDERATION OF SEVEN CONDITIONS
THAT BRING ABOUT OPPORTUNITIES FOR THE
FAILURE OF DENTAL OPERATIONS.*

BY DR. E. K. WEDELSTAEDT, ST. PAUL, MINN.

Mr. President, Ladies and Gentlemen :—

It is very unfortunate for us and for the members in our calling that there are not more local dental societies in this Northwestern country. Wherever there are five or six dentists there should there be a dental club. The benefits derived from an interchange of opinion, a careful consideration of the methods in daily use and a comparison of the ideas possessed by each, is the only means that I know of whereby men can progress with that degree of rapidity that should be a characteristic of those in the dental profession.

I have purposely started this essay in this manner for the reason that I was recently lectured on account of not going more into detail about those things of which I have written in the past. I believe that the men of this society are sufficiently advanced to understand fully anything that I may say. I do not think that it is necessary to begin with the A B C's of any subject with which we are familiar and, before the craft is fairly launched, wearily stare at your yawns while I am taking up as much time as possible in getting down to X Y Z. Let the fault-finders and the dissatisfied ones form a society and thereafter attend the meetings and I can promise them that in the very near future there will not be any cause for complaint.

I ask that you carefully consider this matter of forming dental societies in your different localities. It is of greatest necessity that these be formed without delay. If within a year we do not have one hundred societies formed in this Northwest there will later on be many more regrets than we at present think of.

The results of the investigations of the cause of decay of the human teeth, to which our attention has been called by the researches of Drs. Black and Williams, have generally been accepted by all intelligent dentists. We now know definitely when a cavity in a tooth is prepared and filled without altering the conditions which led to the first decay that it is but a question of time before recurrence of decay takes place. Where there is not an alteration in the conditions which led to the disease an opportunity is left. In such cases it is simply useless to do the work, for failure is but a question of time; this ap-

*Read before the Minnesota State Dental Association.

plies to surgical as well as to dental operations. The question can well be asked, what is meant by this term "opportunity"? I will answer this by saying that it is one of a number of conditions to which I now invite your consideration. My remarks will deal principally with the proximal surfaces of teeth where fillings have been made, and where it is supposed that there is an adjoining tooth in position. Cavity preparation will not be considered, for all should now know what constitutes correct cavity preparation.

What is an opportunity? It is

1st. A margin which is not tight, i. e., an opening between the filling and the cavo-enamel margin.

2d. An overhanging gingival margin of filling material which is or is not protected by a healthy gum septum.

3d. A rough margin.

4th. A margin which has been trimmed too much.

5th. Retention centers.

6th. Noncontouring of the interproximal space, and

7th. Any place around a filling or margin that will catch and hold the food.

Here are seven conditions that are worthy of some thought from us. There are a number of others which I could name, but I believe that enough can be said regarding the ones already mentioned to interest us for some time to come. Let us, therefore, briefly consider these in the order that I have mentioned.

1st. A margin which is not tight.

I believe that 90 per cent of the fillings which are made in the proximal surfaces of bicuspid and molars with cohesive gold do not have tight margins. This condition is caused by the methods used in packing gold. You may be somewhat surprised if you will observe the way gold springs away from the margin while you are packing it into the cavities in the mesial or distal surfaces of incisors. If we look for the cause of this springing away it can be found in the method employed in placing and malleting the filling material. Much care should be exercised in placing properly and condensing thoroughly each piece of filling material as it is inserted. If the eyes are used as they should be, they will quickly aid in overcoming the causes which lead to leaving ditches at some portion of our margins. Where cohesive gold is used for filling cavities in the proximal surfaces of bicuspid and molars, unusual care must be exercised in

placing the filling material or an opportunity is left which, later on, leads to failure.

2d. An overhanging gingival margin of filling material which is or is not protected by a healthy gum septum.

This is simply a shelf on the filling which serves to retain or hold food which undergoes changes in its composition with the inevitable result of having recurrence of decay take place.

Where a margin is tight and not covered with a healthy gum septum, but has a ledge of filling material at the gingiva, it is but a question of a very short time before there is a cavity of decay beside that margin. Where, however, this overhanging ledge of filling material is protected by a healthy gum septum it is simply an opportunity that naturally tends to cause an irritation, which leads to the absorption of the gum in the interdental space and an unhealthy gum septum results. It is not alleged that absorption immediately takes place, for we all know that such conditions have existed for years and apparently little harm has been done, but they are conditions which bring about opportunities for evil, and should be done away with. And while right on this subject let me impress upon your minds the necessity of removing these overhanging shelves of filling material, as they are conditions which lead to the undoing of our work. The fact that some of the manufacturers have, on the cards accompanying their alloys, the statement that it is not necessary to polish the amalgam fillings made from this alloy, is absolutely unworthy of any consideration. It is as necessary to polish amalgam fillings as it is those made of gold. Another thing, the fees charged by a number of men for amalgam work are so small that many men assert they cannot afford to polish the amalgam fillings they make. It is not the intention of your essayist to do otherwise than adhere strictly to the subject in hand, but for the benefit of those who make such assertions I desire to say that all intelligent men look with horror on those members in our profession who follow methods of the kind just described.

As a rule, it is far more difficult to finish properly an amalgam filling than one made of any other material. It always takes me a longer time to finish an amalgam filling made in the proximal surface of a tooth that has an adjoining tooth in position than it does to prepare the cavity and make the filling.

It does not make any difference whether the material used in filling a cavity is gold, amalgam or cement; it should be properly

polished and in so far as possible all conditions that lead to opportunities should be done away with.

3d. A rough margin.

Rough margins are frequently the result of carelessness in packing filling material against margins which have been either properly or improperly trimmed. This has a tendency to break up the original marginal form and then it is practically impossible to so pack the filling material that a tight margin results.

I have just called your attention to the necessity of properly placing filling material and I do not know that it is necessary to say anything further regarding this topic. It may be well, however, to say that after a cavity in a tooth is ready for the filling material the idea that is prevalent, that it makes little difference how the filling material is gotten in there, just so that it is gotten in, is wrong. It may also be well for those who are possessed of such erroneous ideas to study with care the essays of Dr. Black which can be found in the *Cosmos* of 1891. This subject of placing the gold is considered at some length and although the ideas are ten years old they are still standard.

4th. A margin which has been trimmed too much.

If you will take a No. 1, a No. 1½ and a No. 2 sandpaper disc, and so hold them that you can look across their cutting surface, you may be a little surprised at the inequalities which you will find. In proportion as the coarseness of sandpaper discs are increased above No. 1, so in the same ratio is there an increase in the roughness and inequalities of their cutting surface. The same is also true regarding the cutting surface of polishing strips. These coarse discs and strips have a tendency to cut minute grooves and hollows in the tooth around the margins of our fillings. These grooves and hollows are unequal in their depth, consequently when the final polishing is completed an opportunity is left for the attachment of microorganisms. With this opportunity in situ the surface of that tooth is placed in a condition where it is but a question of time before recurrence of decay takes place. In finishing fillings made in the proximal surfaces of teeth it is a very common practice to see men, who should know better, run a flat file or a rotary disc completely between the teeth from the occlusal to the gingival margin. Where this practice is followed, not only is the point of contact on the filling cut away, but a hollow is often left in the filling or in the gingival margin. Frequently the gingival margin itself is so reduced by this condition

that an opportunity is created which also leads to the failure of our work. I am perfectly aware that there are those who still contend that the rotary disc is the most rapid means (and some assert the only method to employ) for the reduction of a filling, and I am perfectly willing to acknowledge that there is some truth regarding its being a rapid means. But from the amount of havoc and opportunities for recurrence created by its use I am amazed at the courage which so many have in deliberately publishing their convictions. It is our duty to study the conditions produced by the use of the rotary disc and to carefully compare these conditions with those which are obtained by more rational and scientific methods.

5th. Retention centers.

Those who are interested in retention centers can gain much knowledge by reading Dr. W. D. Miller's essay, which can be found in the *Cosmos* for April, 1900. It is a most instructive essay and it is most interesting. It fully bears out the ideas to which attention was called by Dr. G. V. Black, in 1891, that all cavities in the proximal surfaces of teeth must have their lingual and buccal margins extended past all contact with the adjoining tooth. In the past we have fully considered this subject and the intelligent men in Minnesota have long since accepted this teaching, so there is little need in saying more about it.

I agree with what Dr. Ottolengui has said that all fillings should have a looking-glass finish. They should be free from pits and hollows, as these are simply "yeast ditches," as Dr. Searl has named them. The tendency of these pits is to assist in retaining food which will cause decay in the surface of the adjoining tooth if it has not already started.

Since I wrote the two paragraphs just read a woman consulted me regarding the condition of the distal surface of the upper left second molar. She said that after each meal it was necessary to remove the food from the interproximal space, and this could be accomplished only after much difficulty. The mesio-occlusal surface of the upper left third molar contained an amalgam filling which to all appearances had been nicely polished. That is, the portion of the amalgam that was reflected in the mirror was very bright. When I attempted to pass an instrument through the interproximal space it struck some obstacle. On examining the condition of the amalgam filling with a little more care I found that that part of the filling which could be reached readily with a rotary disc had been polished, but the mesial

surface had not been polished. Space between the teeth was obtained. A cavity of decay was found in the distal surface of the second molar and on the face of the mesial surface of the amalgam were three distinct ditches. These ditches ran across the face of the amalgam from the lingual toward the buccal, and they were not less than .5 millimeters deep (estimated). The cavity of decay in the distal surface of the second molar was directly opposite these ditches. The patient asked, "Why did that tooth decay?" The condition of the mesial surface of the amalgam filling was pointed out to her and she quickly understood what was meant by the term "retention centers" and how those ditches could hold the food. The man who originally made this work is well and favorably known to all of us. He knows full well or he should know what harm untrimmed and unpolished amalgam fillings are likely to do. The fact that the fillings in the locality just described are so difficult to finish on account of their being so inaccessible, is no excuse for leaving a filling in this condition.

My object in calling your attention to this particular case was twofold.

1st. It at once fixes firmly in your minds what a retention center is and the harm it can do, and

2d. I would most respectfully suggest for your consideration, where there are a number of operations to make, that everybody make it a rule to finish completely each operation before making any other work for the patient.

For years I have followed this method, but notwithstanding the fact that I have impressed on the minds of my patients the necessity of having these fillings polished, there must be a couple of hundred of them remaining unpolished. The patient is wholly to blame for this state of affairs. We cannot be responsible for dereliction on the part of our patients, but I do think that we can very materially alter the state of affairs that exist at present by finishing completely all work before commencing with any other operations.

6th. Noncontouring of the interproximal space.

If the proximal surface of a filling is not contoured properly the interproximal space is not contoured as it should be. The result is that food is held in that space and is a menace to the stability of the rest of the teeth. The proximal surface of a filling should be so trimmed that it slopes in all directions from the contact point. It will then be impossible for food to be retained in that space.

Not until 1897 was there anything said about the importance of giving the interproximal space a proper contour. In that year Dr. Black in a very able essay called our attention to the importance and the necessity for finishing all operations on the proximal surfaces in such a manner that the interproximal space should be properly contoured. Since 1897 less than half a dozen writers have seemed to think this subject worthy of their attention. As we observe conditions we quickly realize what an alteration in them does for our patients, and the more time we spend in studying what constitutes a proper contour for the interproximal space, the more impressed we are with the importance of this subject. Others are also beginning to recognize the importance of this matter. In the *Dental Brief* for February, 1901, and in the *Dental Digest* for April, 1901, can be found an illustrated essay which was written by Dr. J. R. Clayton, of Shelbyville, Ind. The subject of this essay is "A Study of the Interdental Space. Loss and Restoration." The ideas presented for our consideration by Dr. Clayton are worthy of much thought and still more study. If this is given Dr. Clayton's essay the views of some persons regarding the importance of properly contouring the interproximal space may undergo a radical change.

I am of the opinion that where the contour of the interproximal space is ignored it is, in many cases, the direct cause of disease. If it is not a direct cause, it surely aids and assists disease. These ill-trimmed spaces are a greater factor, at least so I believe, in producing and aiding disease than we at present recognize or are willing to take into consideration. The food crowds into these spaces, is held there and undergoes changes in its composition. This keeps the interproximal space in an unhygienic condition. Such conditions always invite disease. As our knowledge of bacteriology is increased, so also will our ideas of this subject change for the better and we will more fully recognize what an opportunity for evil a noncontoured interproximal space is. I cannot emphasize too strongly the importance of studying this subject with much more care than has ever been given it in the past. It is impossible for us to advance beyond our present narrow limits unless we begin to consider this subject as it should be considered and to study the conditions as they should be studied.

7th. Any place around a filling which will catch and hold the food.

As our knowledge of the conditions which lead to the failure of

our work has been developed, so has our knowledge of the importance of trimming properly all fillings and cavity margins been increased. A man of intelligence who has made a study of the conditions as they have been developed for our consideration can now merely examine the condition of the cavity margins after filling to tell just about how long that tooth will remain as it is. Such a person merely watches an operator work for a few moments to know definitely whether or not tight margins are being made. He has but to examine the cavity margins prior to placing the filling material in order to be in a position to speak authoritatively regarding the possibilities of making a good operation in that particular case. Now with our knowledge of the conditions developed to this extent it should be the aim of all in our profession to become very familiar with this knowledge and these conditions, so that no opportunities for holding food are ever left around the margins of our cavities. All should familiarize themselves with the conditions that lead to the failure of our work, and it is the duty of all to obtain an intimate knowledge of the conditions which do harm. By obtaining this knowledge the conditions can be altered and done away with when the operations are made, and failures will not be so likely to take place.

I opened my remarks by making some reference to the establishment of dental clubs. I wish to close them by again saying something about the need of their establishment.

For the past five years many of the things to which I have called your attention in this essay have been taught the men who have graduated from the dental schools in Chicago. It is very true that our knowledge of many and probably all of the conditions to which attention has been called in this essay has been more fully developed during this time. That, however, is neither here nor there. The fact, nevertheless, remains the same, that the men who have attended the lectures in the Chicago schools have had the advantage of these advanced teachings, whereas we have not had them impressed on us with the same degree of thoroughness and are therefore not so familiar with them. These recently graduated men have a better understanding of the results that follow the action of the microorganisms. Being more familiar with this knowledge than are we, they are better fitted to cope with the diseased conditions with which they deal than are those who have not given this subject the study which it demands. The natural result will be that we shall fall farther and

farther behind unless a mighty effort is at once made to give careful attention to the teachings of the past five years. Unless a comprehensive knowledge of these conditions is ours we are not in a position to accept anything further which may be advanced for our consideration and which may be of greatest benefit to those whom we serve. One thing always depends upon another, and as we develop our knowledge of that which is new so do we prepare ourselves to more fully understand those things which in future may be developed for our consideration. With this careful statement of the facts as they now confront us I do not think that it is necessary for me to say anything more about this subject.

PROCEEDINGS OF SOCIETIES.

MINNESOTA STATE DENTAL ASSOCIATION.

DISCUSSION OF DR. KOHLER'S PAPER ON "DEFORMITIES OF THE SUPERIOR MAXILLA DUE TO DEFECTIVE BREATHING."

DR. O. A. WEISS: I am very glad that Dr. Kohler came here and presented this paper. I think it is always a healthy indication when we can get medical men to discuss these topics with us, although we may not always agree with them. I very fully agree with the doctor regarding the practice on the part of dentists of treating deformities of the maxilla and irregularities of the teeth without the coöperation of the nasal specialist. I know a great many cases of irregularities have associated with them nasal defects, and those should be attended to by the nasal specialist if we desire to accomplish the best results. But it is also just as important for the nasal specialist in the treatment of a great many cases to refer them to the dentist for correction of irregularities of the teeth or expansion of the arch. Now as I understand the doctor he confines his remarks largely to the effect of mouth breathing, its effect upon the contraction of the maxilla, and claims he has taken a radical departure from the usual theory. I believe he has given us the same explanation that has always been given, that mouth breathing causes contraction of the dental arch, giving rise to the saddle and V shaped arch. I must take exception to the doctor's conclusions in regard to that, but I am not going to discuss this point at all, because we have with us Dr. Talbot, who is a pioneer in this work. It was he who took a radical departure from the generally accepted conclusion regarding the cause

of the saddle and V shaped arch. I simply want to ask a few questions. If I understand the doctor correctly he says that in all those cases of mouth breathing he finds a contraction of the dental arch or the V shaped arch.

DR. KOHLER: I said I always found that condition where mouth breathing exists.

DR. WEISS: But do we not have cases of mouth breathing where you do not have this condition?—i. e., saddle and V shaped arches.

DR. KOHLER: Yes.

DR. WEISS: Yes. Well, I am very sure of at least two cases that came to my mind just now that are very decided cases of mouth breathing where I found no contraction of the dental arch. If these two forms of arches are produced in the way the doctor describes I want to ask him how it is possible to get such distinctly differently formed arches from the same cause? In the V shaped arch we always have protrusion of the upper anterior teeth and little or no narrowing of the arch in the bicuspid region, while in the saddle shaped arch we have more or less narrowing of the arch in the bicuspid region with no protrusion of the anterior teeth. In the second place, how is it possible to get a certain deformity upon one side of the arch without a corresponding deformity on the other side? We do find cases where we have a V-shaped arch on one side and a saddle-shaped arch on the other side.

Now, I think with these questions I will leave the subject to Dr. Talbot to discuss because he was the one who first gave us another explanation than the old one of mouth breathing for the formation of these two types of arches and which I believe is well founded.

DR. EUGENE S. TALBOT: I should like first to repeat the two questions that have been asked: First, how is it possible, if mouth breathing be the cause of these deformities that there should be two different shapes of jaw, and, second, why is it that this deformity is found on one side of the jaw and not on the other?

DR. C. H. KOHLER: I am very glad this matter came up, because the time is so brief I could not elaborate on all these points. You have the answer to both questions in the nasal septum. You cannot have the saddle or V-shaped arch when the septum will not deflect. Where the resistance is strong and hard it may push it out and yet you will have intense mouth breathing that may be caused by adenoids or enlarged tonsils. Where you have it on one side and not on the other the septum bone may be so hard that it fills the entire

space and it may raise one side before it does the other. The resistance is then on one side and on the other side the deformity does not take place.

DR. EUGENE S. TALBOT: The first person to suggest that mouth breathing was the cause of irregularities of the teeth was Prof. Tomes, of London, in 1858. Since that time thousands of papers have been written on the subject, therefore what has been said is a reiteration.

At the outset it seems obvious to me that irregularity has never been caused by mouth breathing. There is never any pressure on the dental arch by the muscles of the mouth, no matter whether the mouth be open or closed. It seems strange that rhinologists and dentists make this mistake. There is never any pressure on the jaws by the buccinator.

Before I proceed let me say there is a definite time for the development of these deformities. If what the doctor claims be true, there are deformities of the nose as soon as the child begins to breathe. If there are adenoids, deflection of the nasal septum and hypertrophy of the nose, why are there not deformities with the first set of teeth? There is not a case on record. If that were the cause the jaws being in a constructive condition, and softer than ever afterward, mouth breathing would produce that condition with the first set of teeth. In the production of the V and saddle-shaped arches with varieties deviating from these two, why are they dependent upon the time of eruption of the second set? Like playing chess and checkers, it is in the movement, the time of movement the particular form is produced. It is purely mechanical. Suppose the buccinator muscle produces this condition. The arch cannot be broken; no pressure on the dental arch will break it on the outside. If pressure be brought to bear upon the muscle of the cheek, irregularity would be uniform. That is to say, let this line (indicating) represent the superior maxilla. The greatest pressure upon that muscle would be located midway and the break would always be uniform upon both sides. Irregularities of the teeth are never alike. Suppose it be possible to break the arch. Here (indicating) is the first permanent molar; here the cuspid and here the second bicuspid. The saddle-shaped arch occurs. Could the muscles produce that deformity? It is impossible to get the center of the muscle into that locality. The first permanent molar is in this place (indicating) and the second bicuspid there.

Hence the muscle to reach that locality must be situated there (indicating). The doctor says deflection of the nasal septum may be occasioned by a blow during growth. The statistics in my book of thousands of cases, show this to be improbable. In a large majority of cases of deflection it is either in the posterior or the middle portion. There are very few in comparison where the anterior part is involved. A blow upon the nose would not produce a deflection here (indicating) or a deflection of the posterior part of the nose. The vault is never crowded up. In thousands of examinations I have made there are as many V and saddle-shaped arches in low vaults as in high. It is 56-100 of an inch on an average. Here is a proposition which lacks lucidity. Here is the base of the brain and this the height of the vault (indicating). Here are two strong nasal bones, one situated on the right and one on the left. The vomer is situated in the center. There are two strong, heavy bones upon the outside, which are each of them perhaps fifty times more dense and hard than the vomer. The vomer is very thin and slender, about one line in thickness in normal condition, and if that can have any effect upon the vault and upon the base of the brain I would like to have an explanation. Here is the arch (indicating) and the bone in order to press that must be forced up and it must pull not only this bone up, but that one on that side (indicating) in order to meet the brain. Either one of these sides is more dense and hard than the vomer. The vomer is deflected early in life, before the sixth year in many cases. It is deflected to the right or left. These deformities are seen after the sixth year. There is nothing to push, it would break the vomer before it could push anything. It could not bend enough to pull the center of the vault upward. These vaults are always noticed in connection with mouth breathing. The first set of teeth are always normal. When the second set of teeth erupt the mouth is open. Mouth breathing takes place because of arrested and excessive development of the bones of the nose. The alveolar process continues developing until the dental arch is established. It grows up or down for want of resistance. In this manner a high vault is produced. If the child kept its mouth closed the teeth will be at the same distance throughout life, since the alveolar structure is easily influenced in the young. When the mouth is open the teeth are deflected downward. These cases are the result of nervous disorder. The nerve centers are overtired, producing arrest of development. The lower jaw has the advantage over the upper, since it is

movable and more easily developed. The bones of the nose and the superior maxilla easily become arrested, one arrest is dependent on the other. The essayist said it was necessary to know the cause and his statement is just as applicable to rhinologists as to dentists. The first period of stress is at four and one-half months of foetal life, the second at two years, the third in the sixth year and the fourth in the twelfth to fourteenth year. The greatest period of stress is in connection with the nose, throat and mouth and comes between the sixth and the tenth year. These deformities occur between the sixth and the twelfth year or from the time the first permanent tooth erupts until the last. As the skeleton grows these deformities may be exaggerated. Irregularities of the teeth begin with arrest of development of the maxillary bone. The jaw is too small for the teeth. The first tooth to erupt is the first permanent molar. The second tooth the central incisor. For the purpose of ascertaining these deformities clearly, let the arch be divided into two parts. Here is the base of one arch and there the base of the other. This tooth (indicating) is the strongest with the longest root and therefore produces a fixed point in the alveolar process. The alveolar process is much thicker there than in the rest of the mouth. This tooth never moves backward, always forward. The second tooth, the central incisor, is located here. The third tooth is the lateral incisor. The next tooth is usually the second bicuspid, but sometimes the first bicuspid comes in. Then the second bicuspid comes into place here. The arch is now complete with the exception of the cuspid, which is the keystone. If each tooth represent a stone, there are three stones on this part and two on that part (indicating). What other conditions are observed? A very thick alveolar process, teeth with flattened roots and teeth with three roots, so that these teeth are firmly fixed in the jaw. The cuspid tooth is situated above; in other words, it describes a larger circle than the dental arch itself. But suppose arrest of development has taken place, this being the central incisor (indicating), there is not enough room. The keystone on account of the locality and of the long root comes down against the arch and there is not enough room. The tooth will continue to move into the vault until it receives resistance enough to prevent its going further. The lateral incisor has a conical root and therefore it is easily turned in the alveolar process. The cuspid comes into place and touches the anterior part of the bicuspid. The incisors coming into place would be forced forward uniformly. But suppose one side has the

advantage and that by being started a little sooner it has the first move. What is the result? The cuspid comes down, the lateral slides by the central and the lateral pushes up and the central down. It may take a position right on the other, or inside, or twist half way round, and the cuspid will move down into place. If both sides come together a uniform V-shaped arch is produced. But this rarely occurs. The character of the irregularity depends upon the time and manner of eruption of the teeth in which these two arches come together. One arch will be normal and the other V-shaped. One tooth may turn out, or in. The lateral incisor may turn out. It may rotate the central incisor. The V-shaped arch is thus formed and that is the reason there are no uniformly V-shaped arches. It depends upon the movement of the teeth, the time of their eruption, the manner of their development and upon the cuspid tooth as to the character of the V-shaped arch. In the V-shaped arch there is always protrusion, in the saddle-shaped arch the incisors always stand perpendicular. The first permanent molar is a fixed point. For instance, because of decay one or two temporary molars have been prematurely extracted. The first permanent molar moves forward and takes the place. The same condition may occur from local causes. The first permanent molar has moved forward and as a consequence V-shaped arch results.

How is the saddle arch formed? Here (indicating) is the arch of the temporary teeth. All the temporary teeth are in place.

DR. W. N. MURRAY: Is there always a moving forward where the temporary teeth are removed?

DR. TALBOT: Not always.

DR. MURRAY: Is there usually?

DR. TALBOT: It is usual to move forward, except where the cusps are developed on the lower teeth they cannot move forward, but where the patient is a mouth breather the tendency is to move forward. This is the fact in most cases.

The temporary teeth are all on this line (indicating). The jaw is growing and developing and the first permanent teeth are making their appearance. Here are the temporary molars (indicating). The germ of the bicuspid tooth is situated within the roots of the temporary molar. If the temporary molar be allowed to remain longer than normal it holds the crown of the bicuspid tooth on a smaller circle. The first permanent molar moves forward and the result is, it carries the bicuspid into the vault.

How does the partial saddle-shaped arch occur? The temporary tooth has been kept in place too long. The cuspid and first bicuspid move into place. The molar moves forward and crowds the second bicuspid inside. Therefore the second bicuspid appears in the roof of the mouth.

How does the modified saddle-shaped arch occur? It is due in the first place to arrest of development of the maxilla. It is always associated with mouth breathing. Invariably there is coincident with that period of stress, a neurotic condition of the general system. This condition is, however, chiefly local.

I have confined myself to the construction of the dental arch rather than conditions of the nose since they are of more interest to us as dentists. In the treatment of these cases it makes very little difference what is done. Sometimes I send my patients to the rhinologists for removal of the adenoids and sometimes I correct the irregularities first. It is a good plan to have the nose treatment attended to first for the reason that the patient can oxygenate the blood better and returns to the normal condition much quicker.

How far does the patient open his mouth? The older child will drop his jaw, but the young child will only open his mouth for the air to pass through. It is necessary that as much air should pass through the mouth as would pass through the nose. By opening the mouth as wide as possible, there is no pressure on the dental arch. Each case of irregularity must be the same if due to mouth breathing. The same cause must produce the same result. That is never the case. In twenty-four cases of mouth breathers illustrated no two are alike. The jaw is fully developed. I showed yesterday a beautiful case illustrating the hypertrophy of the alveolar process where it has crowded those teeth in the arch. It is purely a local condition. Some are crowded in and some are crowded out.

DR. C. H. STEARNS: I do not want to take part in the discussion, but I would like to ask a question, and that is in regard to the germs of the bicuspid being between the roots of the molar. I did not catch exactly what the doctor meant by that. Does he wish to infer that that retention of the deciduous molar beyond this time is the cause of the suppression of the bicuspid, or does he wish us to infer that that tooth being retained, holding its position in the arch, holds the germ of the bicuspid from being carried out to its proper position? I have never seen a case where I thought the retention of a deciduous tooth has caused the suppression of a permanent tooth.

Does the doctor mean us to infer that by extracting one of these deciduous teeth retained beyond the proper time we would accelerate the development of the permanent tooth?

DR. C. H. KOHLER (essayist) : I will just take a moment of your time, gentlemen, to clear up, if I can, a few of the most essential points of difference. Whether I have convinced you that I am right or not, I am certain I have convinced you that I am a very brave man to thus beard this ferocious lion in his own den. I am forcibly reminded of the rooster who jumps into his neighbor's yard looking for trouble and finds it with a vengeance altogether favorable to the aforesaid neighbor. When I consider that Dr. Talbot is your ablest authority on this subject it seems that I have a good deal of temerity to take a position so radically in opposition. I should like to say to Dr. Talbot that while some of the things I said in my paper seemed in direct conflict with the teachings of his book, that this is only on the surface and that analysis will make them seem different. I should say, too, in explanation, that I was not able to secure his last book so that I am advancing opinions of my own, not to contradict what he has said, but merely to express my beliefs. I said my position was a radical departure because I have read every available textbook on the subject and have discussed this matter with a number of dentists before preparing my paper and I have yet to find any exposition of this matter, in whole or in part, as I have presented it here. I have simply given you my own ideas, irrespective of what anybody else has said and I challenge the doctor to show anything to the contrary. I must doubt the statement that there is anything written on this subject that can be said, even in a general sense, to cover more than one-half of what I have stated. The doctor says I have said absolutely nothing new or original. He has no right to make this statement unless he can substantiate it, and I insist most positively that he cannot do so. Again, it is said that the substance of what I have said appears in a paper presented before the American Medical Association in St. Paul, at the June meeting. Now, if any of you will read that paper, which appears in the last week's Journal of the association, you will quickly come to the conclusion that my worthy opponents *didn't* read it, for there is absolutely nothing in that paper in common with mine, except the one statement, that adenoids cause the deformities of this kind, and this is just a statement without any attempt to offer any proof or justification for that opinion. Now, Dr. Talbot has spent a whole hour or more in trying to show you that

the pressure from the teeth as they come in, in a space too limited, is responsible for these deformities and I contend that this whole argument is worthless because I can show you on models that I have here, and you all have seen a great many vaults in which there is absolutely no evidence of any crowding of teeth, coëxisting with V-shaped vaults and like deformities. I have in mind, now, several cases which I can show any one interested, the most perfect teeth regarding position and apposition with absolutely no evidence of crowding and yet in which there is a very high V-shaped vault in which the deformity is unquestionably due to defective breathing. I am very glad of one thing, and that is that we agree in practice if not in the theoretical cause. It does not make very much difference whether the patient is sent to the nose and throat specialist first or to the dentist first as long as the necessary work is done. I help the dentist when I correct the defective nose condition and the dentist helps me when he corrects any defect of the teeth. I wish to show you now how simple a matter it is for even a great man like the doctor to err in his conclusions. He says a little bone like the septum could not affect by pressure a large bone like the sphenoid. I wonder if the doctor ever tried to break an egg by direct pressure on the ends between his hands? It is impossible practically to do so, simply because in a direct line, along its greatest axis the resisting power is so great. The sphenoid bone, even if it is thicker, forms an arch, but the pressure on the arch is on the weakest point of resistance, while the pressure from the septum is in a direct line and therefore easily capable of ten times the power of resistance. It is a very simple matter to bend this ruler as I hold it in my hands because, like the sphenoid, the resistance is very slight, but if I tried to lessen its length by direct pressure on the ends as in the case of the septum, it would take a power a thousand times as great. The doctor errs again in that he does not take into consideration the pathological condition of the septum. Owing to these pathological conditions, spoken of in my paper, it is very rare to find the septum of normal size. This is true, particularly in the catarrhal condition always present in these deformities where some injury or the catarrhal inflammation makes the septum two or three times its normal size. You see, therefore, that while the power of resistance of an arch is very great on the side of the greater curvature, it is almost nothing by comparison on the side of the lesser curvature. So the doctor reasoned badly when he said that the septum in a direct line,

even though smaller, would not affect an arch like the sphenoid in contact with the lesser curvature. Another thing that Dr. Talbot said, when he ceased to think temporarily while he talked, was that it is a rare thing for children to fall on the end of the nose. This is so distressingly common that I am sure it is not necessary to offer any proof to substantiate my statement. We all know that children fall a great deal, early in life, particularly as they crawl about and in their efforts to walk, so that if you stop to think that the nose is the most prominent part of the face, the tip of the nose is almost certainly the point of contact and usually receives the injury. This I told you is the reason for so many deviations of the septum.

Too much time has been devoted to adenoids in the papers usually written on this subject, to the neglect of the other conditions on which I have dwelt, and in this I felt that I had a right to say that my position was in a measure original. But with all that has been said about adenoids, Dr. Brown tells us of a case in which the adenoid condition was so marked that it interfered with the administration of chloroform, and yet the adenoids were not removed. This seems absolutely inexcusable, for even aside from any effect on the deformity of the jaw, it would have been no more than common humanity to relieve the poor child of so unnatural a condition. And then, further, I never heard of any one taking any position but the one practically all seem to take here, that it is always the thing to remove them, no matter what our opinion may be as to their effect in causing deformities of the mouth. There are a great many other things that I should like to talk about and which appear to me as faulty as those to which I have called your attention, but we have already taken much more time than my paper was entitled to and I feel that I am trespassing on the time of the others on to-day's program. I think, however, I have touched upon the essential points, for in my previous talk in answer to Dr. Weiss' questions, the reason for unilateral deformities, etc., was given at length.

I am very glad to have had the opportunity to come before you, and I hope that what I have said will be of some service in bringing about conclusions so positive that there will be no room for disagreement. If I have said anything new or opened any new avenue for thought or research, I shall consider my time well spent. Personally, I am very much gratified that I came because I have learned a great deal that will aid me in my future work in these troubles. I

thank you very much for the time you have given me and the cordial, I might say almost warm, reception you have given my paper.

DR. EUGENE S. TALBOT: I wish to say there never was a clearer number of illustrations brought together. I am familiar with the literature and have seen all these different illustrations in various papers, but I have never seen them so grouped.

The following lecture on "Interstitial Gingivitis or So-called Pyorrhoea Alveolaris," was given by Eugene S. Talbot, M. D., D. D. S., Chicago:

Interstitial gingivitis is a term I have applied to inflammation of the gums to denote a deep seated inflammation of the alveolar process. Dentists have recognized only the pyorrhoeal stage. That is, they have recognized only the condition that comes when pus flows from the sockets, and have neglected to observe the inflammatory process. The inflammatory process may frequently exist for years before pus infection takes place. Indeed, it frequently exists a lifetime without pus infection and the dentist fails to observe this condition. To understand the etiology of this disease, it becomes necessary to investigate exactly what takes place in the jaws and gum tissues. The term gingivitis, meaning inflammation of the gingival border of the gum, is a familiar one. Interstitial is a term that dentists seldom or never use, but is a common term in medicine, meaning between tissue or in the substance of the tissue. I propose to show that interstitial signifies inflammation of the alveolar process. It is therefore properly applicable to the conditions under consideration. Local inflammation of the gingival margin is gingivitis. This will extend to the peridental membrane. Pyorrhoea alveolaris in the peridental membrane is supposed to be meant, but I will show it has very little to do with the disease. It is the alveolar process that is involved. This simple inflammation of the gingival margin of the gum extends to that tissue, and while the periosteum is involved the alveolar process is likewise involved. On the other hand, in the interstitial variety (and it is so in a large majority of cases), the alveolar process is the first to become involved. Then it extends up into the gingival border of the gum tissue. To say where gingivitis leaves off and the interstitial variety commences is an impossibility, therefore in order to designate the general condition of the alveolar process and gum I will use the two words "interstitial gingivitis." Interstitial gingivitis means an inflammation of the gingival border and the alveolar process as well. Four processes of bone absorption

are always noticed in the inflammatory condition of the bone; halisteresis, the osteoblast, Volkmann's perforating canal absorption, and osteomalacia or senile absorption. (Dr. Talbot illustrated with lantern slides the structure of bone, the initial stages and progress of the inflammatory process in the bone and also showed sections of the teeth of dogs in all stages of interstitial gingivitis.)

DISCUSSION.

DR. F. H. ORTON: What is your opinion of the use of acids in the treatment of the pyorrhoeal stage of interstitial gingivitis? Also kindly detail your treatment of interstitial gingivitis.

DR. TALBOT: Acids increase the inflammatory condition of the alveolar process and are very irritating, especially sulphuric and lactic acids. Those who have been using acids in the treatment of this disease could not be censured, if the pathological status of the disease was not known. It has been supposed that the inflammation was confined to the peridental membrane and gum margin, but this is only a small part. The particular part to which I called attention was inflammation of the alveolar process in bone tissue.

DR. W. N. MURRAY: Would you class boracic acid as injurious in the treatment of this disease?

DR. TALBOT: In a powder it is an irritant. I should advise against its use either as a solution or powder.

I would very much like to hear an expression from other members regarding the impression that was made by the lecture. They must have been more or less impressed with the pathological condition of the jaws. Therefore, before I take up the discussion I would like to hear a general expression from the members.

DR. C. A. WEISS: I would like to ask a number of questions. Dr. Talbot has been studying this subject for years and has made a great many investigations. Among them has been the examination of skulls of various ages. I would like to ask what has been his observation regarding the prevalence of this disease many years ago, when we had less irregularities of the teeth and less decay of the teeth? His examination regarding irregularities of the teeth has shown that many years ago there was comparatively little irregularity of the teeth or decay of the teeth.

There was one other thing mentioned that I should like to ask about. He spoke of the use of acids. I have almost invariably used trichloracetic acid in the treatment of the most severe form of pyorrhoea and felt that I have always derived some benefit from its

use. I do not think that I ever succeeded in curing a case as some claim to have done. The doctor spoke about the use of acid as being irritating and advocated iodine. I want to ask whether iodine is not also an irritant, and why he makes a distinction between the acid and the iodine if both are irritants?

DR. F. H. ORTON: I cannot hope to add anything to the elucidation of the etiology of this disease nor can I discuss it from the standpoint of the pathologist. Still I feel that Dr. Talbot would like to know how well we have interpreted his lecture. This subject which has taken Dr. Talbot twenty years of hard work to elucidate cannot be intelligently discussed by a man who has had his book on interstitial gingivitis only two or three years and has read it only two or three times. I think it would be better to discuss it from the standpoint of the ordinary dental practitioner. Up to a year or a year and a half ago I did not recognize interstitial gingivitis until it had reached the pyorrhoeal stage. When patients came to my office with the usual symptoms of pyorrhoea, swollen gums, loosened teeth and pus pockets around the roots, I adopted the more or less universal method of scraping the roots, applying some acid, aromatic sulphuric acid, and prescribing some supposed germicidal mouth wash. I also gave a wise dissertation to my patients upon microbes, with the understanding that the dental lesions were local, and that this disease was especially contagious. I held that it was incurable, but since I have been following the teachings of Dr. Talbot the result has been a gratification to my patients as well as to myself. Dr. Talbot has given a very satisfactory explanation of what was to me a serious and almost mysterious condition. He has pointed out the many factors that enter into the causation of this condition, and I think when once the etiology of this disease is understood it points the way to the necessary curative treatment. After the disease has progressed so far that the alveolar process has been absorbed away and part of the membrane at the root destroyed, I think the only thing that we can do is to restore those teeth to a partial condition of health. We can make them useful and probably save them for a good many years by the application of iodine, by vigorous massage of the gums and systematic treatment as pointed out by Dr. Talbot. The time to recognize this disease is before it reaches the pyorrhoeal stage. Since reading Dr. Talbot's book and paying some attention to the mucous membrane I find that at least ninety per cent of my patients show symptoms of interstitial gingivitis, and I find to at-

tempt to treat that condition we will have to have twice as many dentists as we now have. The only trouble that I have is to convince the patients that their gums are diseased. As far as they are concerned they do not feel any discomfort and it is difficult to interest them in the matter. Occasionally we hear patients say that their teeth feel long and irritated and they have the impulse to bite. When it has progressed to that stage I can sometimes convince them that they require treatment.

DR. TALBOT: I should have said before taking up the treatment that effete matter attacks the transitory structures like the jaws and appendix, they are more liable to morbidity than permanent structures. The alveolar process and gum tissue are transitory structures. I have shown an evolution of the jaws by way of the alveolar process in the eruption of the teeth. It is readily seen how easily the gum tissue becomes involved when a person has mercurial or lead poisoning. It is because the lead and mercury discolor by stasis and endarteritis obliterans results. A dark line is seen in mercury and a blue in lead. Of course the nervous system is the first attacked when autointoxication exists. The local conditions affect the gums and alveolar process. In regard to endarteritis obliterans, Dr. Ingersoll was the first to use the term serumal deposit, because he thought it came from the blood. How could it come from the blood? There is a withdrawal at the root of the tooth and the tartar fills up the space. It could not come from this source when there is stasis of blood. The deposit is nothing more or less than absorbed alveolar process. There are plenty of instances in the body where the bone is absorbed. Stasis takes place years before the deposit and then endarteritis obliterans occurs. It may be due to local gingivitis or constitutional causes. Stasis induces endarteritis obliterans and further Volkmann's perforating canal absorption and osteoblast absorption occur. Material is deposited upon the roots of the teeth and may be followed by pus infection. All material not carried off because of the stasis of the blood is deposited at the side of the root of the tooth. It is the absorbed alveolar process.

In regard to treatment: With an injured joint what is done? It is deep seated, it is interstitial in character. The surgeon will immediately bathe the part with iodine. Why not take something else? Because iodine is immediately absorbed in the tissue. The iodine is immediately absorbed by the joint and coming in contact with the capillaries forces the blood back into circulation. Deep

seated inflammation in the alveolar process is present. The proper thing to do is to put on a quantity of iodine until the tissue be blackened. Do that every day and it will reduce the inflammation as much as anything. Bleed the part and then bathe the parts with iodine. The best part of the treatment consists of massage of the gums. Just as a limb is massaged or the body so must the gums be. In order to do that well use stiff brushes, the stiffer the better. The gums are apt to be very sore, but it must be kept up until the gums contract upon the alveolar process. There is always absorption, no restoration, but the gum is tightened up. There is a large area said to be never reduced. When this condition exists there is no attachment whatever between the tooth and the alveolar process. It is simply a contraction. Heal the alveolar process, then the gum hardens down. My method of treatment is to first find out how much water the patient is drinking. Man excretes forty ounces a day. To be healthy that much must be taken into the system, and more if necessary. Then examine the urine. I have the patient bring to me twenty-four hours' urine. In case the gums are inflamed and the teeth are becoming loose the system is in a bad condition. I examine the specific gravity and if below twenty I advise the leaving off of meat and if above twenty-five acids of all kinds. I put the patient on a diet of vegetables and bread and all the water possible. In that manner the kidneys, bowels and lungs will throw off the effete matter. If the patient has confidence and is anxious to save his teeth he will do as required.

I am very glad these questions have been asked. The first question I will try to answer is in regard to diseases and irregularities of the teeth among the ancients. I remember very distinctly four years ago while in Athens examining in the national museum some ancient skulls of soldiers that were with Alexander 300 years B. C. There were some very peculiar conditions found in relation to one of these skulls, and that was an absorption of the alveolar process. I have examined a great many ancient skulls in all the museums of Europe and those conditions are all the same. I do not think that any one looking those skulls over would disagree with me regarding the nature of the absorption, but must admit it was entirely due to tartar on the teeth. The roots of the teeth were entirely exposed, especially the lower incisors, and this absorption was due to pressure.

In taking up this phase of the subject there is one point I would like to mention in passing, and that is in regard to gold crowns,

bridges, etc. I believe the time is coming when dentists will never place a crown underneath the gum margin. I believe if that crown should be brought down to within 1-32 of an inch of the gum margin, the desired results would be accomplished. Application of the crown below the gum margin produces irritation and especially if it reaches the alveolar process. Any pressure, no matter how light it may be, if it is simply due to the bristles of a toothbrush, too vigorous brushing, the use of wooden toothpicks, the constant irritation will set up an inflammation of the gum margin extending to the alveolar process and interstitial gingivitis will result. This is merely a suggestion. All have seen bridges and crowns where absorption of the alveolar process had taken place entirely from irritation of the gums finally producing the interstitial disease which causes absorption of the gum margin and leaves a portion of the root exposed. The question arises whether decay occurs around the cervical margin. It does in some cases. In a large majority of cases there is no decay at that point because they are kept clean.

To come back to the teeth of the ancients. There is a local condition which had much to do with degeneracy of the alveolar process in this disease. In those ancient skulls, teeth are bell crowned. That is, they come together about midway between the cervical margin and the crown surface and then they bell out, thus leaving considerable material for the alveolar process. The vaults are very low, there are no irregularities and therefore the alveolar process is very thick, not only in the median line but also between the roots of the teeth. In the peoples of to-day the teeth are nearly parallel as compared with those ancient teeth and as a result those teeth come together and the alveolar process is very thin. Dr. Bonwill showed years ago that alveolar process was thinning out and very easily affected. The alveolar process is so thin in some cases that the least irritation produces absorption of the bone itself and that should be treated in the same way as general interstitial gingivitis. The principle involved is precisely the same in teeth to-day, but there is not so much alveolar process because the arch is higher on account of a neurotic condition.

Decay of the teeth on the buccal or proximal surface is rare. There is very slight decay of the sulci in those ancient people.

One word in regard to osteomalacia, the fourth form of bone absorption. There is juvenile and senile osteomalacia. The juvenile occurs in pregnant women. There is absorption of the bones of the pelvis, the spinal column and alveolar process. In pregnancy there

is more or less interstitial gingivitis, in some cases quite severe. The senile osteomalacia always occurs in senility, but the senile type may occur at four and four and one-half months of fetal life and may also take place at any time after birth. Senile absorption always takes place in the alveolar process. It depends upon the condition of the patient. There is slight bleeding if the alveolar process be absorbing. All of man's teeth would drop out just as those of the dog if he lived long enough. This is atavistic. In some snakes, sharks and whales there is a continuous set of teeth. In man there are as a rule only two sets of teeth; he loses the first set and another takes its place. The second would be lost by natural absorption. Therefore they are only transitory organs, so when fighting interstitial gingivitis, the dentist is fighting the natural absorption, which is senile osteomalacia. The question has been asked whether senile absorption after fifty years of age can be retarded. That would depend entirely upon the excretory organs. If the gums be stimulated by massage like other organs of the body that structure can be kept in a healthy condition. The reason for that absorption is this: The jaws and teeth are not used, this is nature's method to accomplish the law of economy of growth as laid down by Aristotle.

I would not recommend the use of lactic and sulphuric acids where there is inflammation of the bone tissue. Dentists are safe in the use of iodine.

In my last book upon "Irregularities of the Teeth" I have a chapter on pathologic and physiologic changes with the same illustrations shown you. These slides are the result of regulation of dog's teeth which experiments extended over six months' time. The appliances were placed upon the upper cuspid teeth and screws with sixty threads to the inch were used; they were turned in one case a quarter turn or 1-240 of an inch every day for a week and then the dog was killed. In another set of experiments the screw was given a half turn, or 1-120 of an inch for a week and in the third set the screw was turned 1-60 of an inch for fourteen days. I did that to get up as severe an inflammation as possible. The dogs were killed and slides were prepared with the results shown.

Pathology of inflammation is the same no matter how brought about or where located. The slides show the same forms of absorption whether caused by the regulation of teeth or by interstitial gingivitis. An irritation is set up in interstitial gingivitis by drug poisoning and autointoxication, and in regulation of teeth by pressure. This

irritation causes inflammation and produces, according to Von Ebner, osteomalacia, Volkmann's perforating canal absorption and osteoblast. It makes no difference as to the kind of pressure, it causes irritation and absorption. It depends upon conditions if these bones be restored. If the fibrous tissue that holds the osteoblasts be destroyed the tissue is not renewed. It depends entirely if the patient has his growth. If he has, then the restoration is very slight. In other words, to regulate teeth after a patient is twenty-five, the density prevents restoration of the alveolar process. The osteoblasts will not perform their functions to any great extent. In 1870 in college, Dr. Barker presented a young lady whose teeth he had regulated. The regulation was just completed. In the course of time she became a patient of mine. In about five years after marriage absorption commenced, and before her death the alveolar process had absorbed one-half the length of the roots. The pressure of springs was the beginning of the misfortune, they would move back and forth and absorption resulted. I am careful in regulation to hold teeth perfectly firm. Do not try to see how quickly an operation can be performed. The later in life tooth regulation, the less the chances for success. Especially is this true of degenerates.

Gallipe, of Paris, found the N bacillus. Miller held that bacteria was the cause of this disease. I have had many experiments made in Chicago and Milwaukee, and while over one hundred varieties have been found, it has not been proven that it causes the disease. Black found them in the peridental membrane. According to the law of Koch not only must the germ be found but with particular disease, it must be shown to produce that same disease. No one has been able to discover the germ that causes this inflammation. There is a pus germ, but that has no effect on these tissues until inflammation sets in. Take the mouth of a tobacco chewer, the process will absorb by osteomalacia, but the tobacco destroys the pus germs. Most mouths contain pus germs, and whenever there is an inflammation sooner or later pus infection occurs. Local treatment does not reach the bone and that is the reason iodine has been suggested. Because of the condition of the capillaries running through the bone this effete matter is blocked in the bone tissue and inflammation is set up in the gum tissue and absorption results in the alveolar process. Such is the case in osteomalacia.

In stasis and endarteritis obliterans produced by autointoxication, the irritation will produce inflammation of the inner parts of the

capillaries. There might be conditions existing in the system, like tuberculosis or syphilis, whereby the system would be in better condition to take on this inflammatory stage than in health. Absorption is going on all the time. That is the natural process of getting rid of the bone when stasis occurs. This is evident around a root carrying a gold crown.

DR. O. A. WEISS: Do you have complete stasis in that condition?

DR. TALBOT: It must be partial or complete stasis. It occurs in necrosis of bone. Absorption has gone on so rapidly it extends gradually down to healthy tissue.

DR. WEISS: We have the same condition from the use of the hypodermic needle. We have complete stasis of the circulation in the whole soft tissue of the gum.

DR. TALBOT: There will be stasis of blood and endarteritis obliterans.

DR. WEISS: You spoke of this condition often existing for years before there is any apparent manifestation. Then you do not use the term stasis in exactly the same sense as you do in the case of the gum?

DR. TALBOT: Examination of the gum will tell. There is very little circulation. I meant a permanent stasis, not a complete.

DR. W. N. MURRAY: Are not all those conditions which you have described really due to a syphilitic condition?

DR. TALBOT: Not at all. Curtis was in error in trying to show this disease was due to a syphilitic condition. Numerous causes would produce this inflammatory condition of the alveolar process without syphilis. The syphilis toxin acts like other toxic factors.

After extraction there is inflammation and absorption. While I was doing the work on dogs I extracted teeth on the lower jaw and when they were killed I found inflammation and absorption. When teeth are erupted it causes irritation, then absorption to make room for the teeth coming into the jaw: it is an inflammatory process.

Uric acid is the product of improper elimination from the kidneys. It is only the expression of disease, not the cause. In a series of examinations that covered three or four years, I showed that in a thousand examinations there were only four or five per cent of uric acid. It is only the expression of autointoxication, but it is

one of the principal conditions. There are at least a dozen toxic factors in the blood as the result of autointoxication.

DR. F. H. ORTON: In regard to osteomalacia during pregnancy, is it permanent?

DR. TALBOT: No. No condition of the human body produces autointoxication like pregnancy, the tissues do not perform their work properly and the effete matter is locked up. After delivery the tissues resume their normal condition.

DR. ORTON: Would you advise ordinary systemic treatment in treating those cases?

DR. TALBOT: Certainly. In regard to local treatment, first remove the cause. Dentists who use local treatment do good for the time. The more the gum tissue bleeds the more quickly one gets results. Those who believe in local treatment remove the blood, and they do restore the patient to health for the time being, but in two or three months disease will return. The constitutional condition must be removed.

DR. W. N. MURRAY: When we advance in years the teeth sometimes change position, and the occlusion is such that perhaps one tooth is affected. Should that be ground away?

DR. TALBOT: Yes. A gentleman came to me with a piece of bridge work. The pressure was so great that the tooth had become so very sore and the dentist took it off. The tooth had not been used for many years, and putting the bridge on it gave it a double amount of work and set up irritation. I told him to have the bridge put on again and chew as hard as he could, and if it became better all right; if not, remove it permanently.

DR. ROBINSON: Speaking of syphilis brings to mind the experience of a local surgeon. He has two cases, one of a bone ulcer and another a case of fatty tumor, on which he used the same treatment. Would the success of that treatment necessarily indicate a syphilitic taint? He treated both cases with potassium iodide.

DR. TALBOT: Potassium iodide is an alterative of equal value in gout. Syphilis produces its effects through a toxin. Mercurial poisoning produces conditions akin to autointoxication. This toxic material passing through the capillaries produces intense irritation and endarteritis obliterans, which is more severe in syphilis than any other disease. That is why the structures are so rapidly affected by syphilis virus. Potassium iodide simply cleanses the blood. It

would be a good thing to clean the gums with, but there are many better drugs.

A SUGGESTION. BY DR. ALFRED OWRE, D. D. S.

In the past we have had three societies in the State and all of greater or less prominence. They have had sessions of two or three days. The State society has a meeting of three days, and altogether we are getting great benefit out of these organizations. The thought came to me that if we could unite these three societies in one grand meeting at St. Paul next year, which is the home of the Black Club, and the majority of members of our society are members of this club, it would be a good thing for all concerned. If we unite our energy, funds, and time in that way we can get the best men in the Union to meet with us, and we can extend the meeting another day if we desire. I would like to see a determined and united effort made to accomplish this result for next year's meeting. I trust the executive committee and the officers will do all in their power to unite these societies in one grand meeting.

REPORT OF THE COMMITTEE ON EDUCATION.

Dec. 26, 1900.

To the Minnesota Educational Association:

At the last meeting of the Minnesota State Dental Association, held in Minneapolis, Sept. 3, 4 and 5, 1900, the importance of getting the subject of oral hygiene before the pupils of the public schools of our State was brought before that body in the annual address of the president. A committee of four dentists was appointed from that body to advise with the educators to determine the best means of getting this subject into proper form so as to meet with the approval of your association.

We would suggest that a committee be appointed from your honorable body to confer with our committee in this matter.

It is not the desire of the dentists to make this a course of instruction, but rather a forcible suggestion of the importance of keeping the oral cavity as clean and free from all infectious deposits as possible.

The researches of some of our most eminent men, among whom we might mention Dr. J. Leon Williams, of London, England; Dr. Miller, of Berlin, and Dr. G. V. Black, of the Northwestern University of Chicago, have fully convinced the dental profession that much unnecessary suffering might be avoided, and that much good

might result from a movement of this kind, if proper hygienic rules were observed in the young.

We fully realize that the teacher is already overburdened with new ideas that are constantly coming into the educational system, consequently we did not feel like making this a burdensome course of instruction, but as already has been intimated, a forcible suggestion.

Were we not fully convinced of the fact that much ignorance prevails as to the vulnerable points of attacks from decay in the teeth, and the proper means of cleansing them for prevention, we would not present this subject before your association for your consideration.

There are still other and perhaps fully as pertinent reasons for bringing this subject before your convention.

It is a positive and scientific fact that the dangers from infectious and contagious diseases will be lessened to a large degree, if proper hygienic rules are observed in the mouth. This subject can more easily and comprehensively be brought home to the young mind by means of charts and pictures, with proper explanatory pages accompanying them.

While our committee is not authorized to state positively as to the expense of charts, etc., yet we can assure your association that the larger part, if not all, will be borne by the Minnesota State Dental Association.

It is our desire to submit to a committee from your association (should you deem this subject of sufficient importance to appoint one) the subject matter that we wish to convey, and with the aid of the educator, who has had experience in these matters, get this in proper form for the young mind.

The State Dental Association will meet, either in July or August, 1901, and we can assure you that it would be gratifying to our committee to receive the coöperation and endorsement of your association in this most important matter.

W. N. MURRAY,

Chairman Committee State Dental Association.

LIST OF OFFICERS FOR THE ENSUING YEAR: Alfred Owre, Minneapolis, Minn., president; R. H. Pierce, Duluth, Minn., vice-president; Geo. S. Todd, Lake City, Minn., secretary; H. M. Reid, Minneapolis, Minn., treasurer.

Executive Committee: S. R. Holden, chairman, Duluth, Minn.; J. M. Walls, master of clinics, St. Paul, Minn.; S. Bond, Anoka, Minn.; J. O. Wells, Minneapolis, Minn.; J. F. McCrea, Minneapolis, Minn.

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Next place of meeting, St. Paul.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held Nov. 18, 1901, with the President, Dr. L. S. Tenney, in the chair.

Dr. Elgin MaWhinney read a paper on "Local Anesthetics, With the Results of Experiments."

DISCUSSION.

DR. J. P. BUCKLEY opened the discussion. He said: I regret very much that I have not had an opportunity of looking over the paper of Dr. MaWhinney. It is an excellent essay. The manner in which the essayist has treated the subject, taking it up from an experimental standpoint, could not help but interest all his hearers. I do not know of any phase of dentistry or of any subject that has a relation to the practice of dentistry, that needs experimentation by reliable men so much as the subject of local anesthetics. I do not know of any drug or any class of drugs recognized and described in the pharmacopeia used by physicians and dentists whose therapeutic action is so difficult to understand, as are those drugs which we choose to class as local anesthetics or local analgesics. So I am glad to know that the essayist has treated this subject from an experimental standpoint.

Cocaine has been studied a great deal by members of the medical and dental professions ever since its introduction. It is interesting to the student who wishes to acquaint himself with the history of anesthesia, local or general; to know that while cocaine has been

experimented with a great deal by men across the water, the early experiments were conducted by American investigators. The essayist has named one, Dr. Koller. We could name several, Drs. Hepburn, Biggs, Hall, Halsted, J. L. Corning, of New York, and many others. Hall, in 1884, demonstrated by an experiment upon himself that he could inject cocaine into the infraorbital nerve and anesthetize the teeth. Halsted, in the following year, 1885, and some gentleman in South America about the same time, not knowing that Halsted was working along the same line, demonstrated that they could inject nine minims of a four per cent solution of cocaine into the inferior dental nerve as it entered the inferior dental canal, and produce complete anesthesia of the gums and teeth on that side of the jaw. So cocaine has been experimented with all these years, and we have had it used as a local anesthetic ever since its introduction. But the alarming symptoms and the frequent fatalities which resulted from the administration of cocaine caused it for a time to be barred from general use in dental and general surgery. And yet the fact that general anesthetics were objected to by a great many patients, who did not like the idea of becoming unconscious, and the fact, too, that every surgeon recognized that in administering a general anesthetic there is a certain amount of danger always accompanying it—those two facts were potent enough to cause various men in the medical and dental professions to hold on to cocaine, although its use was nearly barred by the majority of men. And so they gradually mastered the technique of its administration, and diminished the strength of the solution until they got it where they diminished the frequent fatalities that resulted from its use, and those alarming symptoms that we all dislike.

In 1897 the profession was given alpha and beta eucaine. The following year (1898) we got nervanin. These chemicals or drugs were introduced for the sole purpose of displacing cocaine or superseding it. It only took a few months for the professions to see alpha eucaine drop entirely out of use. Beta eucaine and nervanin are still with us, and are used a good deal to-day. But they failed in their mission. They failed to perform that which their manufacturers expected that they would perform, that is, they have fallen far short of superseding cocaine; yet, while they do not perform the function that was assigned to them, they have been useful in this, that they have broadened and diffused the field in surgery where local anesthetics are used. If it had not been for the fact that beta

eucaïne and nervanin and perhaps chloretone were introduced, the medical profession would never have realized that which they were very enthusiastic about, namely, spinal cocainization, of which you have all read. There is a great deal to be learned in connection with the administration of cocaine.

The essayist has referred to using a solution of common salt (sodium chlorid), for he says it aids in the elimination of the drug. While this is true, the use of sodium chlorid in connection with any of these local anesthetics—cocaine, eucaïne, nervanin, or what not—has another important use. We can produce transitory anesthesia by simply injecting into the gum or tissues distilled water. But the specific gravity of distilled water being less than the liquid we find normally in the tissues, causes an inhibitory swelling of the cell, and pain is produced. If we inject into the gum or into the tissues about the mouth too strong a solution of any chemical, the specific gravity being greater than that of the liquid that is found normally in the tissues, we set up an osmotic action in the cell; water is abstracted by the concentrated solution, the cells are condensed or concentrated, and pain is also produced. Common salt is added to these anesthetizing solutions for the purpose of getting an isotonic liquid, which is osmotically and chemically indifferent, or one which, when injected into the tissues, has about the same specific gravity, as that of the liquid already in the tissues. According to the experiments of Schleich and others, if we add to the solution or solvent in which we expect to dissolve our anesthetic agent, eucaïne or cocaine, or what not, eight-tenths of one per cent of sodium chlorid, we will get a liquid that has a freezing point of 0.55° , centigrade scale, and has a specific gravity approximating that of the blood. If this solution, this isotonic liquid, is warmed to the temperature of the body and injected into the tissue, the gum, or any other tissue of the body, we will not have that osmotic action, and we can get the full benefit of our anesthetizing agent that is in the isotonic liquid. While sodium chlorid aids them in the elimination of the drug itself, it has this other very important function to perform. Some object to the use of cocaine, eucaïne, nervanin or chloretone, because they produce sloughing. If sloughing is produced as the result of the injection of any of these anesthetizing solutions, to my mind it is produced by one of two causes or both. First, we have not used the isotonic liquid, or we have used a liquid that brings about the osmotic action, and after the effects of the analgesic pass away, this disturbed rela-

tion of the cells causes an irritation which may produce sloughing. If sloughing is not caused from that source, it must be because we do not thoroughly sterilize the apparatus into which the solution is put, or the solution itself which we inject into the tissue. As the essayist has said, it is an easy matter to use a steel or metal syringe, and we can sterilize that together with our needle by boiling. If we use beta eucaine, it is easy to sterilize it. This chemical can be boiled indefinitely without undergoing decomposition. But the sterilization of a solution of cocaine is quite another thing. It becomes a more serious problem. We have men whose opinions we must respect, who tell us that if a solution of cocaine is heated to 175° F., which is below the boiling point of water, the cocaine will become decomposed into ecgonin, another alkaloid which possesses no anesthetizing properties whatever. On the other hand, we have the opinions of other men, equally as high in the medical profession, and it seems to me we ought to respect them. For instance, Dr. Rudolph Matas, of New Orleans, who is eminent in the medical profession, and an authority on local anesthesia, and such men as Dr. Cushing, of Baltimore, who claim that we can sterilize a solution of cocaine by what is known in bacteriology as the fractional method. That is, we can heat the solution nearly to the boiling point, let it cool, and repeat this until we have thoroughly sterilized the cocaine solution by the fractional method.

Another interesting point to be learned is with reference to the toxic properties of these drugs. The essayist has told us that we can get the same anesthetizing effect by injecting twelve minims of a two per cent solution that we can by injecting three minims of a four per cent solution, without producing the same toxic effects. This is an interesting point to note. We have the results of repeated experiments performed by Dr. J. Custer, who has proved this with reference to cocaine, and he says it is true also of eucaine or nervanin. He has proved that the toxic power of cocaine depends more on the strength of the solution than it does upon the quantity of the liquid injected. That is to say, one grain of cocaine injected into the tissue with a maximum amount of liquid is less toxic than one grain of cocaine injected into the tissue with a minimum amount of liquid. Or this, that a quantity of cocaine injected into the tissue, using a two per cent solution, is five times less toxic than the same quantity of cocaine injected into the tissue, using a five per cent solution.

As I said in the beginning, this is an interesting paper. The subject has been treated in a very admirable manner, and I regret that I did not have the opportunity of reading the paper so that I could have discussed it, rather than the subject.

DR. N. J. ROBERTS, of Waukegan: The subject of local anesthesia is one in which I have been interested perhaps as long as any man in Chicago. About eleven years ago there was organized in Chicago what was called the "Local Anesthetic Club." I mention this fact simply to show you that at that time the question of local anesthesia was very little understood by those who dared to experiment with cocaine, and that the use of cocaine for a few years previous was somewhat experimental in our profession, a number of deaths having occurred by its use. In testing the drug at that time, I found considerable sloughing, as well as nervous symptoms, on the part of the patients, after its use. I was using from four to eight per cent solutions, injecting very little of it, but that quite deeply, into the tissue. The result was that I began to look for other means of producing anesthesia, and commenced investigating hypnotism, which at that time was a very much alive subject in the medical profession. I think there are members present who were at the clinic I gave at the Grand Pacific Hotel, when I succeeded in anesthetizing several subjects by means of revolving mirrors. We experimented with a view to finding a reliable local anesthetic, because it was so important that we should have something which we could depend upon.

Coming to the subject of the paper of the evening, the author's views agree exactly with my own in regard to the effects of cocaine and of the other drugs that have been mentioned. We have some local anesthetics, however, which he has not mentioned. But I agree fully with him in regard to the use of cocaine. I have used every drug mentioned, in combination with cocaine, excepting nitroglycerine, which I have with me always when using cocaine, and I have found that by using perfectly pure distilled water with one per cent of cocaine, I can get the effect desired without any trouble following. At first, cocaine was uncertain and unreliable. I had some samples of which I made a one per cent solution and others a two per cent solution, with which I could get marked effects. Again, another solution of four per cent would produce scarcely any anesthesia, but considerable irritation. The carrying on of a large number of experiments by manufacturers has resulted in the drug being purified and

relieved of its poisonous qualities. I do not know exactly what they have eliminated, but they certainly have left out certain properties, which in the beginning, produced toxic effects and considerable irritation. Speaking of eucaïne, nervanin, chloretone, orthoform, and suprarenal extract, I find that with these drugs there is no case in which they will not produce anesthesia, but with the first three the irritation and swelling, as well as their slow action, make them undesirable, as compared with cocaine.

I have found that a one per cent solution of cocaine, properly injected, is all I could desire as a local anesthetic for general extraction. For sensitive gums, setting crowns, treating cases of pyorrhoea, etc., a four per cent solution of cocaine, applied externally, followed by suprarenal extract, and afterward by orthoform, will produce anesthesia during the operation, and freedom from pain for several hours afterward.

Orthoform applied to the pockets following an operation for pyorrhoea, will completely anesthetize the parts for from six to fifteen hours. It is an antiseptic, as well as a local anesthetic.

It is claimed that eucaïne is one-fourth and nervanin one-tenth as toxic in their effects as cocaine, but I have never been able to demonstrate the fact on a human being, and produce the same degree of anesthesia, as with cocaine.

Cleanliness of the solution and instruments, as well as the method of injecting, are the secrets of anesthesia with cocaine. There is no other drug necessary, according to my experience. I believe the essayist stated in his paper that by the addition of certain drugs, or a combination of them, the effects of cocaine are rendered less toxic and more prolonged, but my experience in adding several drugs, in different solutions, has been to produce more or less irritation, without any advantage to compensate. The proper method of demonstrating this fact is to take the same mouth, under practically the same conditions, and inject a one per cent solution of pure cocaine, on one side, and any other combination that you see fit on the opposite side, so that you can compare the different effects.

With reference to heart failure from the use of cocaine, I do not recall any marked effect in any of my cases, and I think there are men present who will bear me out when I state that I have used the drug clinically seven or eight thousand times during the last six years. It is true we may have a hysterical patient once in a while, following the use of cocaine, whose vitality is low and in whom a

small injection will manifest itself, especially if the patient is frightened.

In cases where there is considerable inflammation or abscesses we can apply a four per cent solution of cocaine for five minutes, followed by the extract of suprarenal capsule, and at the end of another five minutes we can lance the most severe abscess without inflicting pain, if we do not produce pressure. The suprarenal capsule will so intensify the anesthesia that we can work all around the abscess.

In conclusion I would state that the solution should be injected into the tissue midway between the periosteum and external membrane. If you inject *under* the periosteum it will cause it to separate from the bone, and it is liable to produce sloughing, or there will be soreness and the tissue will show marked irritation.

If you use distilled water, pure cocaine, have every instrument clean and inject carefully with fine, sharp needles, the question of sloughing gums will be eliminated. Keep the solution from touching the tongue or getting in the throat, and you will have but little hysteria or fainting to contend with, for fainting is usually caused by nausea.

These are the conclusions I have reached after more than ten years' experience with cocaine of different strengths and in various combinations.

DR. L. O. GREEN: About all I can tell you is the practical experience I have had with adestoria and the manner in which it is manufactured. We have had gratifying results from its use in the last eight or ten years.

Adestoria is a mechanical combination requiring considerable tact and technique in uniting so many dissimilar elements, and yet, in action in many respects, very similar, and the similarity can be summed up in two words—antiseptic and anesthetic. It is not necessary to inform the profession how difficult it is to unite oils, tinctures and water so that the union will produce a solution as clear as distilled water, but it is only by chemical experimentation that one is brought face to face with difficulties which are not discoverable in any other way. Along the line of investigation, no matter what the subject, the unlooked-for, the unexpected, is sure to turn up, and this brings us to the subject of cocaine.

In experimenting with the various cocaines on the market no difference was noticeable in fresh solutions, as a rule, but soon the

difference of stability became manifest, and one brand, supposed to be the best on the market, proved to be the least stable; and in combination with the constituents of adestoria produced a dark precipitate and rendered the solution unstable. On two occasions, when it was impossible to obtain the brand which had stood the test under every possible condition, even freezing, when incorporated in adestoria, bad results were noticed, not serious, of course, but of sufficient importance to condemn its use, except, possibly, fresh solutions. Solutions of eleven cocaines are said to be unstable, but some of them are made stable under certain conditions when properly combined with some other drugs.

There are four combinations in adestoria. The first group consists of the essential oils; the second group consists of the tinctures; the third group consists of phenol and menthol; the fourth group consists of cocaine and nitroglycerine. Each group is separately prepared for the final combination. Bottle No. 1 contains groups 1, 2 and 3. Bottle No. 2 contains 1, 2, 3 and the proper proportions of glycerine and distilled water. Bottle No. 3 is the same, filtered. Bottle No. 4 represents the addition of cocaine and nitroglycerine and the entire combination filtered.

It will be noticed that before the cocaine is added the solution has a strong local anesthetic action, which can be determined by the taste. No fear need be entertained of being poisoned, as the combination is not dangerous. All utensils used in making adestoria are white flint glass, and, although the combination of adestoria is a strong antiseptic one, they are thoroughly cleansed with boiling water each time before using to prevent any bacterial infection. All the bottles are boiled, although new, and rinsed with a solution of alcohol and formalin. Every precaution is taken to prevent the unseen, infinitesimal poisoning, which is liable to occur when chemical laboratory work is carelessly done.

Please note the absurdity of using drugs which have a general systemic action in a local anesthetic combination, such as morphine, atropine, iodoform, etc.

DR. GEORGE W. COOK: Before I studied dentistry to any great extent I had some experience with cocaine. The first recollection of the use of cocaine in dentistry was when I saw some experiments performed by Dr. Pruyn. It was several years ago, and until I had seen these experiments I was a firm believer in cocaine, but at that time he showed me some things that demonstrated conclusively that

cocaine was not to be used in a careless way, and that we knew very little about it. I am always reminded, when I think of the use of any local anesthetic, of a little incident that occurred in the clinic of Dr. Christian Fenger. A young druggist came into the clinic one day to have a small tumor removed from the back of his hand. He said to Dr. Fenger: "Doctor, I do not want to take a general anesthetic; just inject a little cocaine in there and remove the tumor in that way." Dr. Fenger, in his characteristic manner, said to him that cocaine was poisonous. But the druggist replied, "I am not afraid of it." Dr. Fenger then said, "Schroeder, give him a hypodermic syringe and let him kill himself." (Laughter.)

The experiments of most of us in regard to the use of local anesthetics have been such as to make us more or less cautious. The experiments that Dr. MaWhinney and myself have conducted, and have been partially reported to you to-night, have established some facts, and with additional experiments I have no doubt we will be able to bring out a great many more interesting things.

In the use of animals for experimentation, I think a great mistake has been made in regard to the susceptibility or predisposition of certain animals, which is very evident with such animals as dogs and man. There is the same variation or susceptibility in dogs that there is in man and in guinea pigs and rabbits that are extensively used for experimental purposes. Animals should be selected of the exact weight and same age, if possible. Dr. MaWhinney used several rabbits that were born on the same day, their mothers being sisters, and they had lived under identically the same environments. So you see there would be some advantage in using such animals for experimental purposes.

With reference to sloughing that so frequently occurs, it will not occur if asepsis is observed. Sloughing only occurs from the action of the drug on the tissue, rendering it susceptible to the action of microorganisms introduced into the tissues by the use of your instrument.

With reference to adestoria, referred to by Dr. Green, it is more advantageous than anything that has been offered, inasmuch as it is a stable combination, put up in an aseptic condition, and should not be left open in the office or in the laboratory for the reason that it may become infected. Although the dentist may exercise great care in the use of the needle with which he introduces the anesthetic, yet he may carry into the tissue microorganisms. So it is equally

important to take the precaution of rendering the part into which you are going to introduce the needle thoroughly aseptic, otherwise you may get sloughing. I do not think sloughing would occur from the agent itself. The breaking down of the cellular tissue is largely due to the action of microorganisms after they have been introduced there. They have been introduced into a favorable field. When you have produced anesthesia of a part, you have reduced it to the minimum of vitality. You have rendered it pathological, as it were, for the moment, and when you have introduced into the tissue microorganisms, it is a favorable field for their development.

With reference to the use of normal salt solution, the object in introducing it is to raise blood pressure, and the moment we raise blood pressure we immediately eliminate any toxic substance from the system.

DR. C. P. PRUYN: I would like to add my word of commendation for the elaborate and lucid paper that has been presented by Dr. MaWhinney. It was clear and concise. He had something to say, and he said it. When he was through, he stopped. That is something we all ought to consider in treating a subject of this kind.

The subject of sloughing from the use of cocaine was touched on very nicely by Dr. Cook. Sloughing results very often from septic matter that has been carried into the tissue from the external surface by the needle. The tissues are not properly prepared or rendered aseptic before the introduction of the needle, and I have seen a large number of cases of sloughing following the extraction of teeth, septic matter having been carried into the gum tissue by the forceps, the operators feeling sure that the forceps were fairly clean to begin with, but a large amount of impure or septic matter upon the roots of the teeth was carried into the tissues and severe sloughing resulted. I have seen so many such cases, particularly from the cheap advertising dental parlors in our city. I am satisfied that many such cases occur from that source.

To go back a little bit into ancient history, it was in the year 1885, shortly after Dr. Kohler made his experiments, which were first reported in August, 1884, that I procured some of the drug. I think I was the first dentist in Chicago who began experiments with this drug. I made my experiments in cavities of decay, thinking I would get results, but they were nil. I first experimented with the drug by local applications, then by injections. I believe I paid ten cents a grain for cocaine, then a dollar a grain, before I ceased my

experimental work. After experimenting some little time, two or three years, some of my friends knew that I was experimenting considerably with cocaine, and I was invited to contribute a paper on cocaine at the twenty-fifth anniversary of the Chicago Dental Society. I foolishly consented to prepare a paper on the subject. I then undertook a series of systematic experiments, procured a large number of dogs, and the first dog I experimented on and subsequently killed made me shudder to see the poor animal in the throes of death fighting for his breath. It made an impression upon me that has lasted ever since, and taught me that cocaine should be handled very carefully, and particularly when we are using it on the human subject. I performed many experiments before I operated with it on a patient. I gave the results of my experiments before the Illinois State Dental Society, and I said at the time before I began to use the drug, this patient, in all probability, will exhibit some toxic symptoms. So we will be prepared for them, and if they should manifest themselves it would give us an opportunity of showing what can be done in the way of resuscitating the patient. I scared some of the members of the society, and I was not sorry for it, because I had been somewhat scared myself in experiments. This incident taught them to use the drug carefully, not recklessly. Some years later, when we were using this remedy so recklessly, the Michigan State Dental Society wanted me to talk to them on the subject of cocaine. It seemed that a large number of men throughout the State of Michigan were using the drug carelessly. I went over there and got into a fight with the professor of materia medica of the University of Michigan. He was using the drug somewhat carelessly or recklessly in affections of the eye and was reporting gratifying results from its use. There were no toxic symptoms following its use in two per cent solution. Two or three weeks previously a patient died under cocaine. It was a plain case of overpowering of the drug. So I scared the dentists there in regard to the use of it, and I have been scaring dentists ever since, because this drug, like morphine, is one of the most dangerous and powerful drugs we have. While morphine is one of the best drugs we have, capable of doing great good, it can do a great deal of harm. And so this drug, cocaine, one of the best, is capable of producing the greatest injury of any drug we have. So taking this meeting to-night it would seem that the pendulum is swinging to the other extreme. I am glad the subject comes up for discussion, and that it has been han-

dled in such an able manner by Dr. MaWhinney and Dr. Buckley. We are indebted to the essayist for his admirable presentation of the subject. Those of you who have not experimented with drugs, and are using cocaine in daily practice, will get some idea of the toxic effects of the drug. But you do not want to have these toxic effects manifest themselves in human subjects. You can sometimes get the poisonous action of the drug from the physiological effects, from the various toxicological effects, until you have death. It will open your eyes.

A peculiar idiosyncrasy exists in many individuals toward this drug. They are predisposed to the toxic effects of this drug, and we can never tell the individual who is going to be susceptible to it, and so we need to handle it with great care.

I am glad the remedy *acestoria* has been brought forth to-night in such a scientific way. In it we have one remedy, I think, which is of incalculable benefit, particularly the last one named, nitro-glycerine. We should have it in our cases ready, and at hand, as well as nitrite of amyl, all valuable remedies, although they must be handled with care.

If we have these agents at our immediate disposal, we can meet any emergency that may arise. Above all, we should strive to be calm. I will mention one experience that I had with my son. I have related the incident before. Early in my experience in the use of the drug, my son had a nasal polypus. He was then eight or nine years of age. I took him to one of our rhinologists to have it removed. It was about eleven o'clock in the morning. He swabbed his nose with a ten per cent solution of cocaine; some of it went down into his throat, and almost instantly he fell from the chair to the floor unconscious. The operation was suspended. A week later I took the boy to the doctor's office at eleven o'clock, and I had an idea at that time that if we could give the remedy on a full stomach instead of an empty one the results would be better; at the same time, I knew that coffee was an antidote or caffeine was an antidote for cocaine. The boy was given a big sandwich and a cup of strong coffee, which was a marked stimulant for him. So the operation was performed without the boy developing any toxic symptoms whatever. A week later I took him back again for the doctor to operate on the other nostril, but did not fortify him again as I did the second time. The operation was done very readily; the boy started for my office, which was two or three blocks distant, and it was with great diffi-

culty that he reached it. I soon saw that I had a case of marked cocaine poisoning. He was struggling for breath upon the street in trying to get to my office. He could not talk, and all he could say was "Papa's office." I applied restoratives, put him on the floor, and sent out at once for coffee, gave nitrite of amyl, and morphine hypodermically, and I think it was a couple of hours before I restored him. At times he would have a peculiar spasm, then there would be a relief from that for two or three minutes, followed by another exacerbation or spasm, and so on. These spasms continued for about two hours.

I have had similar experiences with dogs any number of times and have saved them. For several years, when I was connected with the Northwestern University Dental School, at the time the medical school was in the same building, I would take the senior and junior classes of both institutions, and give them an evening seance in regard to the use of cocaine. They brought me in twenty-four dogs; I would take them and divide them into twelve equal pairs as to size, appearance, vitality, etc. One dog from each pair I would fortify with an antidote, and at that time I used morphine and an atropine mixture. I would give the same amount of cocaine to other dogs without fortifying them with the antidote. The dog not fortified would have physiological and toxic effects of the drug and would die. This made an impressive seance for these young men. They saw deaths from the use of the drug; they saw struggles for breath, and it was frightful in some cases to see the poor animals struggling. Similar effects may be produced in the human being, if the drug is used carelessly. If you have not seen its effects in the dog, and have not known what to do, you can only have a fair idea of what the effects are like in the human being. The only way for you to gain experience in this direction is by experimenting on dogs before testing the use of any drug on human beings.

I would like to talk to you longer on this subject, but the time is late, and I thank you for having listened to me.

A MEMBER: Incidentally, I would express the opinion that sloughing is frequently caused by neglect to either remove loose pieces of alveolus or not to close the alveolus after an operation.

DR. GEORGE N. WEST: When Dr. Pruyn was experimenting extensively on dogs with cocaine, he operated on me for a painful boil on the joint of my thumb, and with a very small amount injected hypodermically, two per cent, he was able to take the lancet, make

a crucial incision, and gouge out the center without any more sensation being produced than in carving a piece of ham. I soon became converted to the use of cocaine. I have had a number of experiences with it, one of which was very amusing. It may have been a case of hysteria, but it was caused by the patient's knowledge of the drug and its effects. It simply shows that a little knowledge is a dangerous thing. The patient had read about cocaine before she came to me. This was in 1888. She requested that I use cocaine, and I made a solemn vow at that time that I would never use cocaine again on any patient who requested it; that if patients knew nothing about it, I would use it. She wanted the drug used for the removal of a lower wisdom tooth. She was accompanied by her husband and a lady. She was apparently in good health, and I acquiesced in her request to use the drug. I stepped into an adjoining room and motioned to her husband and the lady, and asked them to watch everything I did, but under no circumstances to speak. No matter what the patient said or did, they were not to speak or let her know they were in the room, and under no circumstances were they to leave the room. I proceeded to take down a bottle of distilled water, and demonstrated that it was perfectly harmless by drinking some of it. I put it on the bracket in front of the patient; I filled my hypodermic syringe and made all preparations before the patient. I explained to the patient that before ejecting it, it might be necessary to put a little of the solution on the gum, so that it would not hurt her in puncturing with the needle, which I proceeded to do from the bottle of distilled water. I moistened the gum a little, and saw a drop of it trickle down the throat. I waited a short time for the drug to have its effect, but in less than a minute I had one of the most beautiful illustrations of cocaine poisoning you ever saw under any circumstances. The patient manifested every symptom that she had read about. She had tingling of the finger-tips, dryness of the mouth and throat, gasping for breath, etc. We resorted to all of the usual methods of resuscitation. She had a sense of nausea. She was given aromatic spirits of ammonia, brandy, etc., but the symptoms lasted for some time. She fainted; she was unconscious, which was more from fright than anything else. This was a beautiful demonstration of the effects of cocaine poisoning. For a number of years I explained this incident to others. Undoubtedly, this patient had an idiosyncrasy against the use of this drug. This case made such a deep impression upon my mind that I shall never forget it. I have

since witnessed many operations with cocaine, and I have given clinics with it in college in the extraction of teeth. This is a warning never to tell a patient, who has some knowledge of the poisonous effects of the drug, that she is a dangerous case to use it on. On account of the hysterical effect produced, it is likely to lead to mental trouble. But the trouble in this case was all mental, not physical.

DR. GEORGE B. PERRY: I wish to express my appreciation of the clear and concise manner in which the author of this paper has presented the subject to us and the amount of investigation and research it represents in addition to the deductions from numerous experiments. My experience has taught me that a two per cent solution of cocaine is much safer and more satisfactory to use than a four per cent or a stronger one and if I were to make a change I should decrease, rather than increase, the strength of a two per cent. The solution brought out recently by Parke, Davis & Co., a two per cent combined with chloretone, makes a stable preparation which reduces toxic effect as in the use of cocaine only. Their solution of the suprarenal capsule under the name of adrenalin is more convenient for use than the powder form in case of continued hemorrhage.

In regard to orthoform, I have not used it extensively, but do not recall a case of sloughing from its application. Too much stress cannot be placed upon the necessity for thorough and complete sterilization of hypodermic needle points as they are a prolific source of infection.

It is my habit to use a syringe for the injection of local anesthetics *only*, another for pyorrhoeal treatment and others for specified purposes, as I feel one hypodermic syringe for general use is more difficult to keep sterilized and much more likely to be contaminated.

My hypodermic syringes are fitted with platinum points and immediately after using them I pass the point through a Bunsen flame, bringing it to a red glow, which destroys any microbes that may have collected upon it. The barrel of the syringe can be kept in an aseptic condition by thoroughly cleaning it and using a good liquid antiseptic. Too much care cannot be exercised in making a hypodermic injection. I *invariably* protect the parts in the immediate vicinity with cotton rolls, pieces of bibulous paper, strips of gauze or wads of aseptic cotton, preferably the cotton rolls, as they are readily adjustable to the irregular lines of the mouth, to prevent

any of the solution used for injection from trickling into the throat or onto the tongue. This precautionary measure is of the greatest importance in preventing the unfortunate results which are oftentimes due to the careless handling of the syringe. Another very important feature in its use is the *expelling* of the *air* from the barrel of the syringe *before* the puncture is made, thus avoiding the expansion which it causes when forced into the tissue. I never partly or wholly draw the plunger back while the needle is inserted, thus preventing the withdrawal of any septic matter that may be in the immediate vicinity of the puncture. It is within two years that I was told by a dental surgeon that a young girl sixteen years of age had been inoculated with syphilitic germs by a hypodermic syringe at a dental parlor in Chicago, where she had gone to have a tooth extracted, and it was readily recognizable from the colony of syphilitic microbes surrounding the opening made by the needle, as shown by a microscopical examination.

DR. C. E. BENTLEY: There have been a few points brought out and emphasized this evening which I think should be reëmphasized by the essayist in closing the discussion. One of the points brought out by Dr. Buckley was new to me, at least, and that is, there are possibly two causes for sloughing, one being the osmotic action, and the other the lack of regeneration of the tissue into which the anesthetic is injected. Those are things that are held responsible for sloughing.

Another point which should be particularly emphasized is asepsis in injecting any medicament into the tissues to prevent sloughing. We may sterilize the solution, we may sterilize the instrument or hypodermic needle, and yet we may force microörganisms into the area injected because that area has not been rendered sterile. If you use a needle and run it between your fingers before injecting the solution, you are liable to cause infection. If you lay the needle upon a table which is septic, you are likewise liable to carry infection into the tissues with the needle. If you rest it on the tissue adjacent to the area that is to be injected, you are liable to carry infection. The point I wish to emphasize, therefore, is that the area to be injected should be thoroughly sterilized before the injection is given. If the fingers of the operator are sterile, the instruments and fluid rendered sterile, then there is no possible chance for sepsis to occur.

There is another point I wish the essayist would speak of in his closing remarks that has not been touched upon, for I recognize a number of students this evening, and that is what quantity of nitro-

glycerine is used to counteract any poisonous effects that may arise as the result of injection of cocaine, and how it should be used. We have heard of nitroglycerine, of caffein, and other things that are antagonistic to cocaine poisoning, but we have not heard anything as to the administration of it.

I desire especially to congratulate the society on the excellence of this paper by Dr. MaWhinney and Dr. Cook, and we ought to be proud of any young man in a society of this kind who can recall dates and authorities and deliver such a scientific discussion of this paper as did Dr. Buckley.

DR. MAWHINNEY (closing the discussion): I have only a few words to add in closing the discussion. In the first place, I wish to thank those who have taken part for the kindly manner in which they have received the paper, and also for going a little outside of it for the purpose of emphasizing some practical points. I had anticipated that such would be the case. I felt that my paper was long enough without touching on several of the things that have been brought out in the discussion. I want especially to thank Dr. Buckley for his excellent remarks, and I owe him an apology for not furnishing him with my paper, so that he might familiarize himself with its contents previous to its being read here. However, it was not my fault. I had instructed my stenographer to send him a copy of the paper, also copies to Drs. Harlan and Wadsworth; but my stenographer was sick, and was unable to furnish the copies.

I want to say a word regarding what Dr. Buckley said of the Schleich method of using nine-tenths of one per cent or normal salt solution. The objection which I find recorded in medical journals is this, that the readiness with which the normal salt solution mingles with the fluids of the body makes the anesthetic effect of short duration.

The osmotic action referred to is simply the equalization of the different specific gravities of liquids. I believe that physicians and dentists are beginning to discontinue the Schleich method of using salt solution. I find it so recorded by Professor Dorland, of Cleveland, who has gotten out a most excellent work on pharmacology in which he dwells at length on this point. If you inject a solution exactly of the same specific gravity of the fluid of the tissues, it permeates readily, not by osmotic action, but simply because you are using normal salt solution which will go through the tissues readily. Normal salt solution is eliminated from the tissues. In some of

our experiments on animals normal salt solution was injected into the peritoneal cavity, and inside of a minute or so there was an enormous evacuation of the bladder. Urination was abundant in less than a minute from the time of the injection, showing it was taken up by the blood and passed out by way of the kidneys in that time.

I did not speak of orthoform or nervanin, because orthoform is not recommended for this kind of anesthesia. It is recommended for topical application, a place where it is of the greatest value. Those of you who have not used it for such a purpose will find it of great practical benefit after you have extracted teeth and there is a painful condition of the jaw. Just wash out the pocket with pyrozone, dry it and get it clean; pack the alveolus full with orthoform, which is feebly soluble; lay a piece of cotton on top of it, and it will stay there for two or three days; the pain will disappear in the meantime, and you will have accomplished your object.

Regarding the use of dogs, they cannot be used for the kind of experimental work I have been conducting, on account of individual idiosyncrasies. If we want to arrive at any positive conclusions, we must operate on animals that will respond in like manner to our drugs. We went over the whole range, and finally came to the use of guinea pigs and rabbits under certain age for our experimental work. The rabbit must be young, and the younger the better, so long as he is older than nine weeks. Rabbits that are older and full grown manifest individual peculiarities.

With reference to the use of nitroglycerine, we found a greater amount of cocaine could be used where nitroglycerine was given two minutes before the cocaine. If you make a cocaine preparation put enough nitroglycerine in it so that with each injection into the gum, you will have given 1-200 grain of nitroglycerine. We found after trying morphine, atropine, strychnine, caffeine, etc., that we got the most ideal results from nitroglycerine.

I do not understand what Dr. Roberts meant when he referred to putting two drops of chloretone in the solution. Chloretone is not a solution at all, and I cannot understand how he would add two drops of this drug to a solution to preserve it. In other words, it is a solid preparation.

The point brought out by Dr. Buckley with reference to the cause of sloughing is admirable. It is directly to the point. I think it is very often the cause of sloughing. I am certain it is. The main point I wish to impress upon you is that the more liquid you can

use, so long as you have a reasonable anesthetic power in your solution, the better will be the result. There is no question about that.

As to the manner of making the injection, it seems to me that we all need a little schooling in this direction. Our success will largely depend upon that. If we inject the solution into the soft tissue, where it comes out again, and is not retained under pressure, we do not get a maximum result. We want to inject the solution into the periosteum, and under hard pressure, and we should use a syringe with strong finger guard, so that we can grasp it with our fingers and then the thumb against the end of the piston and under great pressure force in the liquid, allowing the syringe to remain a moment, then it may not escape from the point of injection. If you can wait five minutes for each injection, all the better.

DEATH OF DR. H. B. NOBLE.

Dr. Noble, one of the oldest and most respected practitioners of dentistry of the city of Washington, D. C., died suddenly from heart disease while riding in a street car on March 5, 1902. Dr. Noble was graduated from the Baltimore College of Dental Surgery in 1859, and continued in active practice till his death. He was well known as a quiet, conscientious practitioner and society worker, to whom was given all honor by the associations of which he was a member. His death leaves a void, not only in the dental ranks of the locality where his best energies were spent, but also in our national gatherings where his genial personality was ever welcome.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

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EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

CHANGE OF DATE.

By postal card vote the date of the National Dental Association has been changed to July 28-31. This was done with the idea of accommodating those who wish to attend the meeting of the International Dental Federation in Stockholm, and also the meeting of the American Dental Society of Europe. As these two meetings occur early in August the slight change in the date of the National Dental Association, will hardly enable those in attendance at this meeting to reach Sweden in time for the others unless their dates can be postponed a few days. We do not know whether this is feasible or not, but it would seem very desirable if it could be done. It is to be regretted that in view of any change being made in the National it could not have been placed a week earlier than it has, but it seems that a suitable hall at Niagara Falls was not available at that date.

In any event it is the duty of the members of the National to try to make this meeting a notable success. Niagara Falls has always proved a favorable place for holding the meetings, and those in the past have been almost uniformly successful. One question worthy of serious consideration at this time is the annual date of the meetings. There seems to be a growing conviction on the part of many of the members that August is a bad month for the Society to meet. It has sometimes happened that the intense heat at that time has seriously interfered with the success of the meeting, and then again many dentists are away on their vacations during August and cannot be lured from recreation to attend a dental society. It would, of course, be impossible to select a month that would be agreeable to all, in fact it may be considered doubtful whether an iron bound rule specifying a certain month each year is for the best interests of the association in view of the wide divergence of latitude and climate in which

under present provision the society meets. A month that is favorable in the north would probably not be at all favorable in the south, and thus it is thought by some that the date of the meeting should be made variable according to the locality in which it is held. The matter should be carefully considered with a view to the adoption of some plan which will result in the greatest ultimate good to the association.

[Just as we are going to press we receive word through a cablegram to Dr. T. W. Brophy, that the American Dental Society of Europe will not convene till August 12, and the International Dental Federation till August 15. This reciprocal action on the part of these organizations makes it possible, for those who so desire, to attend the National Dental Association at Niagara Falls, and also the two meetings at Stockholm.]

HISTORICAL SKETCHES.

It is with much pleasure that we note the lively interest being taken in the "Historical Sketches" by Dr. Thorpe, in the DENTAL REVIEW. It is a healthy sign when dentists are desirous of knowing something about the men who gave an impetus to the early development of the profession, and the time seems propitious for placing on record the chief events in the professional careers of these pioneers. In this connection it would seem appropriate to call attention to a notable effort in this line which we fear the profession generally do not appreciate at its true worth. We refer to the work that has been done on the history of the profession by Dr. Charles McManus, of Hartford, Conn. As chairman of the committee on history in the National Dental Association he has gathered together a vast store of knowledge connected with the early days which will prove exceedingly valuable in the making of a suitable history of dentistry, and the profession should awaken to the importance of formulating some plan whereby this material may be utilized in such a manner that it will be made a matter of permanent record.

There are probably two reasons why this work has not excited greater interest than it has. One is that the volume of business to be done at the National meetings is usually so great that the annual report of the committee is easily allowed to pass without due consideration, and the other is that Dr. McManus is

so diffident and modest and so wholly unobtrusive that few men are made to realize the true significance or the real value of the work he has been doing. It is to be hoped that at the next meeting of the association a renewed interest may be taken in this most important matter, and that the committee on history be given the necessary financial and moral support to bring their work to its proper ultimate conclusion.

[On account of the pressure on our pages this month the "Editor's Desk" is unavoidably crowded out.]

BIOGRAPHICAL.

JOSIAH FLAGG—SOLDIER, SAILOR AND FIRST NATIVE AMERICAN DENTIST.*

BY BURTON L. THORPE, D. D. S., ST. LOUIS, MO.

Much has been written that is not true regarding the forefathers of dentistry, and much has been left unwritten. Many times tradition or legend in history have taken the place of facts. The following facts are from notes and memoranda copied from the family records, now in possession of the descendants of the subject of this sketch.

Josiah Flagg was born in Boston, Massachusetts, in 1764. He was a son of Lieutenant Colonel Josiah Flagg of Elliott's Regiment of the Continental Army, and at the age of 15 years enlisted, as a private, in his father's regiment, which did much for the cause of American Independence during the Revolution.

In the winter of 1781-82 this regiment, together with the French troops of Count Rochambeau, camped near Providence, Rhode Island. It was here Josiah Flagg was introduced, by his father, to Joseph Lemaire, the French surgeon-dentist, and obtained from Lemaire instruction in dentistry.

Following his honorable discharge from the army in 1782, he began the practice of his profession, at first as an itinerant, until 1783, when he located at Boston, where he practiced with success until 1812.

Dr. Flagg believed in letting the public know he was equipped in all departments of his art. While practicing in Boston, in 1785,

*The writer acknowledges his indebtedness to Dr. J. Foster Flagg and Dr. William H. Trueman for information regarding this sketch.

he issued an advertisement which states: "Dr. Flagg transplants teeth, cures ulcers and eases them from pain without drawing; fastens those that are loose; mends teeth with foil or gold to be as lasting and useful as the sound teeth, and without pain in the operation; makes artificial teeth and secures them in an independent, lasting and serviceable manner. Sews up hare-lips, and fixes gold roofs and palates, greatly assisting the pronunciation and the swallow. * * * Cuts the defects from the teeth and restores them to whiteness and soundness without saws, files, acids and such abusives as have shamefully crept into the profession, and which have destroyed the confidence of the public. Sells, by wholesale and retail, dentifrices, tinctures, chew-sticks, mastics, teeth and gum brushes, suitable for every age, complaint and climate, with directions for their use."

In later years he published a circular as follows: "He practices in all the branches with improvements (i. e.), transplants both live and dead teeth with great convenience, and gives less pain than heretofore practiced in Europe or America. * * * Extracts teeth and stumps, or roots with ease. * * * Reinstates teeth and gums that are much depreciated by nature, carelessness, acids, or corroding medicine. * * * Fastens those teeth that are loose (unless wasted at the roots), regulates teeth from their first cutting to prevent fevers and pain in children, assists nature in the extension of the jaws, for the beautiful arrangement of the second set, and preserves them in their natural whiteness entirely free from all scorbutic complaints, and when thus put in order and his directions followed (which are simple) he engages that the further care of a dentist will be wholly unnecessary. * * * Eases pain in teeth without drawing. * * * Stops bleeding in the jaws, gums, or arteries. * * * Lines and plumbs teeth with virgin gold, foils or leads. * * * Fixes gold roofs and palates and artificial teeth of any quality without injury to any independent or natural ones, greatly assisting the pronunciation and the swallow when injured by natural or other defects. A room for the practice with every accommodation at his house, where may be had dentifrices, tinctures, teeth and gum brushes, mastics, etc., warranted approved and adapted to the various ages and circumstances; * * * also chew-sticks, particularly useful in cleansing the fore teeth and preserving a natural and beautiful whiteness; which medicine and chew-sticks are to be sold wholesale and retail that they may be more extensively useful.

"* * * Dr. Josiah Flagg has a method to furnish those ladies



JOSIAH FLAGG.

and gentlemen or children with artificial teeth, gold gums, roofs, or palates that are at a distance and cannot attend him personally.

"Cash given for handsome and healthy live teeth at No. 47 Newburg Street, Boston" (1796).

From the foregoing record we are led to believe that Flagg was one of the first to use gold foil in the filling of teeth in the United States, and also one of the first oral surgeons of his time. He possessed much mechanical ability and was recognized for his ingenious methods in operating. Credit is given him for being one of the earliest "to drill into the pulp cavity to relieve distress caused from a dead pulp." This operation was at that time called "pulp tapping."

At the beginning of the war of 1812 Flagg's patriotism got the better of him and he enlisted in the naval service, shortly after to be captured by the British and taken to England as a prisoner of war. While on parole, he practiced dentistry in London during 1813-14 and 15.

In England he made the acquaintance of the distinguished surgeon, Sir Astley Cooper, and in pursuit of farther knowledge of his profession and the desire to master the methods of instruction used by the medical teachers of London he frequently attended the lectures and clinics of Sir Astley Cooper, at Guy's Hospital.

On one of these occasions, Sir Astley having failed in the attempt to extract a bicuspid root turned to Mr. Flagg, who was with him on the platform, and said, "Perhaps our American friend, who is a skillful dentist can assist us in this dilemma." Flagg arose bowing to the teacher and the class, as he produced from his pocket a graver (such as is used these days by jewelers who do engraving) his favorite tooth extracting instrument, which he thrust between the root and the alveolus so deftly that the obdurate root flew from its socket half across the room. Prof. Cooper was astonished. Thanking Mr. Flagg he said to the class "Gentlemen, that was a marvelous feat, a most marvelous feat."

When the lecture was finished, Sir Astley again thanked Flagg for his skill and asked him to accompany him to a friend, who was a portrait painter, as he wished to have his likeness painted.

The print that illustrates this sketch is from that water-color painting and shows Flagg with his graver in hand. Had it not been for the suggestion of Sir Astley Cooper, we would not have had an authentic likeness of Josiah Flagg, as a traditional miniature

of 60 or 70 years ago, said to be in possession of an aunt then 70 or more years old, has disappeared.

Josiah Flagg was a giant in intellect, skill and stature. He was much above the usual height, massive, weighing over three hundred pounds, yet well proportioned and graceful in his movements. He had a kind, jovial disposition and was a gentleman in all the word implies. His ready wit and humor made him appreciated wherever his lot was cast.

At the close of the "War of 1812" he returned to his native land and a few hours before his expected landing was shipwrecked in New York harbor; he reached his home in Boston suffering severely from the result of his exposure. His strength gradually failed and as winter approached, hoping a warmer climate would benefit him he went to Charleston, S. C., where, a few days after his arrival, he contracted the yellow fever, which prevailed at that time, and there died September 30, 1816, aged 52 years.

In 1797 he married Eliza Brewster a descendant of the sixth generation, in direct descent, from Elder William Brewster of the "Mayflower" 1620.

He was father of two sons, the eldest, Dr. Josiah Foster Flagg of Winter St., Boston, one of the early makers of porcelain teeth, and author of "The Family Dentist," 1822. The second son was Dr. John F. Brewster Flagg, inventor of the lateral vacuum cavity for dentures, and first professor of anatomy and physiology in the old Philadelphia College of Dental Surgery, chartered 1850 (which failed and was reorganized as the Pennsylvania College of Dental Surgery in 1856). This same Dr. John F. Brewster Flagg was the first to expose Morton's so-called "New Compound Letheon," and proved it to be nothing but sulphuric ether, which he administered experimentally as an inhalant without ill results, and protested that it was not patentable.

The venerable and talented Prof. J. Foster Flagg of "New departure" fame, son of Dr. John F. Brewster Flagg and grandson of the subject of this sketch, is the last dentist of his branch of the family. He is now enjoying a well-earned rest from his busy life's work at Swarthmore, Pa.

Josiah Flagg was also a great grand-uncle of Dr. Eben M. Flagg, of Philadelphia. Josiah Flagg undoubtedly was the first native American to make dentistry his life's work and the first to carry to

any foreign land evidence of American dental progress. Josiah Flagg builded better than he knew. From his time to the present they of the name of Flagg have been prominent in American dentistry. They have stood boldly for advanced methods, for new departures and the ideals they believed to be the best for the profession's good. Much does American dentistry owe to the name of Flagg.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

The February meeting of the First District Dental Society of the State of New York was held on the 11th, at the New York Academy of Medicine, 17 West Forty-third Street, President Charles A. Dubois in the chair.

After the usual routine business, Dr. Charles E. Francis, one of our oldest and best esteemed practitioners, was introduced as the essayist of the evening.

While Dr. Francis has recently retired from active practice, it was scarcely necessary to introduce him to the audience that evening, as nearly every one present was personally acquainted with him.

The subject was "Practical Hints and Suggestions." Beginning years ago, with his start in practice in New York, he described the many essential things to insure success in dental practice, drawing from his ample and extended experience in this city.

In the "symposium" which followed Drs. Wm. Carr, A. L. Northrop, S. G. Perry, J. Bond Littig, Alonzo B. Miller, G. Alden Mills and J. F. P. Hodson spoke feelingly of all the many good and pleasant things in Dr. Francis' character. His essay was not one to be discussed, but to be appreciated, for, as Dr. Perry aptly said, the "paper was like the man, sweet and gracious." Drs. Carr and Miller had both been associated with Dr. Francis for years, and could say naught but good.

After this "symposium" Dr. Francis was asked to describe the New York he knew in his early years, especially as pertaining to dentistry, which he proceeded to do. That was the time when nearly all dentists were below Canal Street, and when Dr. Elaezar Parmly went up to Bond Street he was told he was going "out of town." Bond Street *now* is away *down town*.

Dr. Wm. Carr, from the the board of censors, called attention to a very undesirable bill in the assembly—No. 691—and urged upon all the necessity of united action for its defeat. He asked each member to communicate with the representative from his assembly district and ask him to vote against the bill.

The clinic committee made a brief report from the afternoon's clinic.

The following was the announcement sent out with invitations to this meeting for the afternoon clinic:

"The clinic will be on oral surgery, and efforts are being made to get cases especially pertaining to dental surgery. The operations contemplated are alveolotomy, or the opening through the alveolar plate to relieve a blind abscess when causing great pressure and severe pain. Curetting the fistulous canal from a chronic alveolar abscess. The amputation of a diseased root. Replantation and other surgery necessitated in pyorrhoea alveolaris. The amputation of an exfoliated root of a multi-rooted tooth, and the restoration by a porcelain substitute.

"The surgeons who have promised to operate are Drs. G. Lenox Curtis, M. L. Rhein and Robert Eugene Payne.

"Members of the profession are requested to bring cases for diagnosis."

Dr. Fossume, chairman, reported that Drs. Rhein and Payne were unable to obtain patients, but gave brief descriptions of their methods in lieu of operating. Dr. Curtis had two cases of abscess of long standing when he performed alveolotomy and one case of necrosis. These cases were described in detail by the chairman.

At some previous meeting of this society, Dr. Wm. Carr read a paper on "Dental Parlors," which was so valuable that the society ordered a large number of reprints.

The February meeting of the New York Institute of Stomatology was held Wednesday evening, the 12th, at the office of Dr. E. A. Bogue, 63 West 48th St. It was held on this evening, out of the usual order, because of the other engagements of the essayist of the evening, who was Dr. Parke Lewis, of Buffalo, N. Y. His paper was "Adenoids and their Relation to Irregularities." He handled his subject skillfully from the surgical standpoint, and as a speaker was exceedingly acceptable. Drs. Wendell Phillips, A. Edward Davis, Wm. H. Haskins, T. K.

Tuthill, Stuart Close, Prof. C. A. Brackett, of Newport, R. I., S. E. Davenport and others took part in the discussion. Dr. Close asked a question which Dr. Lewis did not seem to care much to have to answer. *Viz.*: "In how large a percentage of cases, if any, do adenoids *recur*." His answer was to the effect that recurrence was frequent.

The regular meeting of the Odontological Society for February, was held on the 18th inst. at the usual place, Academy of Medicine, 17 West 43d Street, the recently elected president, Dr. J. F. P. Hodson, presiding.

The essayist of the evening was Dr. D. D. Smith, of Philadelphia, on an original system for tightening loose, lower incisors and cuspids, embracing a method of securing artificial substitutes, without clasps or plates when one or more of these teeth are missing.

This system, depending as it does, on the use of teeth which have secure implantation, the essayist will discuss, in connection with it the mooted question of devitalization and removal of pulps—*when* and *how*—in sound teeth.

Dr. Smith seemed to many present, to waste time in taking *over an hour* in describing his method of treatment of teeth, especially when necessary to devitalize, before he took up the special subject for the evening, that which most had come to hear. This he did not reach until 10:15—rather a late hour.

Briefly his method is to apply the arsenical paste in some recess of a cavity away from the pulp exposure if there be one, or drill a small hole into the dentine until sensation is felt in those cases where devitalization is desirable, such as for crowning, etc. The arsenic is then placed in such recess or pit, and sealed in place with *white* gutta-percha, which Dr. Smith regards as better than anything else.

To tighten loose teeth he advises the devitalization of pulps, then the treatment and filling of the canals.

For securing artificial substitutes in front of mouth, he devitalizes teeth on either side of a space, drills a hole large enough to pass a fair sized wire into the pulp chamber, forms metal pattern to fit over lingual surface of incisor, solders pin and backing firmly. This process may be done with teeth on either side of a space, then a dummy tooth or teeth extended from these backings to fill the space.

The various dental societies were courteously invited to attend a meeting of the Section of Laryngology and Rhinology, of the New York Academy of Medicine on February 26, to hear "your own" Dr. Brophy. The following was the invitation:

THE NEW YORK ACADEMY OF MEDICINE,

17, 19 and 21 West 43d Street.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

A meeting of this Section will be held in Hosack Hall, on Wednesday, February 26, 1902, at 8:15 P. M. You are cordially invited to attend.

ORDER.

Address by TRUMAN W. BROPHY, M. D., of Chicago. "Surgical Treatment of Congenital Defects of the Palate;" illustrating, by the use of the stereopticon, his manner of operating.

NOTE.—The special purpose of the address is to point out the advantages of operating before the child has attained the age of six months.

Discussion to be opened by Dr. Robert Abbe, Dr. Arpad G. Gerster, Dr. James F. McKernon, Dr. Howard Lilienthal and Dr. B. Farquhar Curtis.

The twenty-second annual banquet of the Central Dental Association, of Northern New Jersey, took place on Broad Street, Newark, N. J., in the parlors of Simon Davis. Quite a contingent from Brooklyn and New York always attend the monthly meetings of this association, so to see them in attendance at the annual, was not very startling. The post-prandial part of the programme was responded to by such gentlemen as—F. G. Gregory, D. D. S., president; R. Wayne Parker, M. C.; W. W. Walker, M. D. S., D. D. S.; R. Ottolengui, M. D. S.; William James Evans, Esq.; Charles S. Stockton, D. D. S.; Roderick M. Sanger, D. D. S.; J. Allen Osmun, M. D. S.; H. S. Sutphen, D. D. S.; W. L. Fish, D. D. S.; B. F. Luckey, D. D. S., and J. G. Halsey, D. D. S.

It was a very successful occasion. Those who responded to the various sentiments opposite their names did so graciously and well.

The Second District Dental Society, State of New York, met at the "Argyle" on Fulton Street, Brooklyn, on Monday evening, March 10. The paper of the evening was very important, which was evidenced by the unusual representative gathering of men from far and near, reminding one of an auspicious occasion instead of a regular monthly meeting. It must be remembered

that the special annual meeting of this society took place in January. Then their program was quite replete, but on the 10th ult. they had prepared for those who assembled a treat. The regular order of business was suspended so that the essayist, Dr. E. C. Kirk, of Philadelphia, might have all the time he required to present his subject, "The Clinical and Chemical Study of a Case of Dental Erosion," which was comprehensively illustrated in a way we were told such as had never been done before any dental audience. That was the projection of microscopic pictures on the screen, directly from the slide, using a special microscope for the purpose, with an electric arc light as illuminant. Dr. Kirk handled his audience intelligently and they were charmed. His subject consisted in demonstrating the nature of the substances in the salivary secretion which cause dental erosion. He had intended presenting a patient before the society but was unable to do so. His opening was the sketch of a case of erosion which he denominated as a constitutional disorder. The bucco-mucous glands were the principal ones at fault. Di-hydrate of sodium phosphate was possibly the cause of some trouble. He said that this character of disease was generally attributed to sedentary habits, and affecting those of inactive life. His patient, he went on to say, was a Prussian by birth, possibly close to fifty years of age. A masseur by occupation, not sedentary in habits, with a history of rheumatism about twenty-five years ago, ever since which time his teeth have been eroding. Somebody made the gentleman a cast aluminum plate with gold clasps which Dr. Kirk thinks did a great deal of damage, due to the intense galvanic action which the patient was constantly conscious of. The man's own denture is rapidly being dissolved. Dr. Kirk referred to his work with Dr. Michaels, of Paris, last summer which he applied to this case with no results. He then resorted to the chemical scheme of analysis, and also sought the aid of the dean of a Pennsylvania college and a professor of chemistry. Nothing new was elucidated, until he used the spectrum. There the spectrum analysis of saliva showed *spots*. He felt quite sure he had something, so his next resort was to endeavor to get the "something" from the saliva, which he did by passing it through a dialyzed water bath. The chemical salts were separated by this means from the mucein. Dr. Kirk was quite certain that acid salts were the cause of erosions because alkalis do not dissolve

enamel. The dialyzed product was finally gotten which upon spectrum and chemical tests proved to be lactic acid. The doctor here described how lactic acid results from the fermentation of food products in the mouth. Traces of acid calcium phosphate and acid sodium phosphate due to diseases of suboxidization were also found. Dr. Kirk's exhibition of known lactic acid under the microscope, using polarized light, and the dialyzed salivary product similarly treated were identical. Thus the doctor seemed to prove to the audience quite conclusively that lactic acid was in all probability the solvent of dental enamel in cases of dental erosion.

Mr. Gayn, a chemist, was called upon to open the discussion. He sustained the essayist and finally quoted from some author that "when we have a theory that fits all the facts, no matter how impossible the case may seem, it must be a fact nevertheless."

Dr. Head said that he listened to Dr. Kirk with feelings of emotion. He expressed his surprise at the strides Dr. Kirk has made since last fall, when he saw the specimens in Dr. Kirk's laboratory. Then he thought he was still in the dark. Since these experiments he feels that something has been given to the profession of incalculable value. In his very prosy way he described the discovery of the Rosetta stone, which opened the way to interpretation of hieroglyphics, so these slides made by Kirk have opened up a field which will in time lay bare the science of tooth structure and disease. Hail to Dr. Kirk, for he is on the right track!

Dr. Goodrich, a bacteriologist, seemed to misunderstand the essayist. He appeared to infer that lactic acid was in the circulation; for he remarked that the presence of lactic acid was undoubtedly due to the presence of sugar. He failed to see how lactic acid attacks teeth before it does bones.

Prof. Weisse complimented the essayist and said that certainly in his exhibition he leaves nothing to be desired. The conditions in the oral cavity are due to conditions behind the phenomena. This leads up to systemic medication that will correct or modify the functions. He told of sending a specimen of saliva to Dr. Kirk for examination and how Dr. Kirk's diagnosis of that case was clearly made out.

Dr. Jarvie said that it was extremely fortunate for us that Dr. Kirk went to Europe and became enthused by Dr. Michaels.

Although this theory may apply to some cases of erosion, he feels quite sure that it does not apply to all. The essayist has certainly opened up another chapter that will make the treatment of some of these cases more easy.

Dr. Kirk, in closing the discussion, set Dr. Goodrich right, for he remarked that lactic acid does not exist in the blood, but is manufactured in the mouth. Sodium calcium and sodium acid phosphates he believes to be the cause of some smaller erosions of the teeth.

Dr. Kirk said that all he could say on the subject has not been said, but promised more.

Of course, the vote of thanks from the society was due the doctor, and it was given heartily.

Yours truly, "THE BOROUGHs."

REVIEWS AND ABSTRACTS.

TRANSACTIONS OF THE NATIONAL DENTAL ASSOCIATION.

It is interesting and encouraging to note that the papers presented to the meeting were on the whole of a higher order than those of the previous year at Old Point Comfort, Va., and in many ways it was a more successful meeting.

The two most important addresses delivered before this body within the last two years have been those given by the presidents—one by Dr. B. Holly Smith, at Old Point Comfort, in 1901, and the other by Dr. G. V. Black, at Milwaukee, in 1902.

They are significant of what Carlyle calls the "divine unrest" that makes for the betterment of this organization.

Dr. Smith tiring of the slipshod and in many respects unscientific papers that had been yearly presented to the association, made a strong plea for a more systematic method of collecting data for scientific papers. He suggested the appointment of commissioners backed by the authority of the association to collect data, to prosecute research, etc., etc., in order that there would be an avoidance of the constant repetition and rehash of things and thoughts once digested.

By this method he hoped to avoid the repetition of desultory papers by incompetents and to enhance the interest of the association in true scientific work.

Dr. Black, recognizing much of the same condition, encompassed the whole subject in a more drastic and, we believe, thorough manner. He made a broad subject of the organization and submitted a new constitution that should provide a working basis to carry out his suggestions. Dr. Black's treatment of the causes for the proposed changes is exhaustive.

Space will not permit us to notice each cause, but two will suffice at this time.

1. Our present plan of doing all literary and scientific work in general session should be abolished, and the same should be divided into distinct sections, presided over by officers elected annually by the general session.

2. The formation of the program for each session should be placed in the hands of *one* committee, with subdivisions to mark the sections, so that the responsibility of this important work is definite.

This centralizing the power and responsibility into the hands of a few for the government of a representative organization such as the N. D. A. is of paramount importance. It goes without the saying that much wisdom should be exercised in this selection. By such a plan the purpose of Dr. Holly Smith of the previous year can be realized, together with the eradication of many outgrown laws that are partially the cause of many uninteresting and unprofitable meetings of this organization. C. E. B.

MEMORANDA.

Remember the State Society in May. Read the program in this issue and cancel the dates in your appointment books.

Dr. Burt Barry, a promising young dentist, and graduate of the Missouri Dental College, class of '98, died suddenly at Mount Sterling on February 15, 1902.

Dr. C. C. Chittenden, of Madison, Wis., was in Chicago last month, as was also Dr. H. L. Banzhaf, of Manitowoc. With such men as these on the State Board of Dental Examiners the commonwealth of Wisconsin is safe.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

A meeting of the Wisconsin State Board of Dental Examiners for the examination of candidates will be held in Madison, in the State Capitol, beginning on Tuesday, May 13, at 9 A. M.

Candidates must come prepared with rubber dam, gold and instruments to demonstrate their ability in operative dentistry. H. L. BANZHAF,

Secretary.

CHANGE OF DATE.

The Eastern Indiana Dental Society has changed its date to May 7-8. The place of meeting is Shelbyville.

THE DENTAL SOCIETY OF THE STATE OF NEW YORK.

Next meeting May 14, 15, 1902. Place of meeting, Albany. A very interesting program has been prepared, and the officers are assured of a successful meeting.

The eighth annual meeting of the Southern Wisconsin Dental Association will meet at Madison, Wis., in the Senate Chambers, May 14, 15 and 16. A cordial invitation is extended to the profession. The best meeting in the history of the association is expected.

J. H. REED., *Secy.*

Dr. Jonathan Taft, of Cincinnati, visited Chicago in March. Dr. Taft is one of the patriarchs of the profession. He has just rounded out half a century and ten years in the practice of dentistry. Just think of it—sixty years! And what fruitful years they have been. Always an influence for good, always with high ideals, always for the dignity and the uplifting of the profession. What a record! How many of us will approach it? Not many. But each one of us should accept it as a message to emulate the example of this sturdy veteran.

CLASS REUNION.

The class of 1887 of the Chicago College of Dental Surgery held a reunion on the fifteenth anniversary of its graduation, March 28, 1902. The affair was a most gratifying success in every way. Class sentiment ran high, and the claim was made, and sustained, that to this one class Chicago owes much in the way of dental advancement in recent years. It was in this class that the Odontographic Society of Chicago was originated, and the class roster will show the names of those prominent in most of the progressive movements that have been inaugurated in the profession in this vicinity ever since its graduation.

THE AMERICAN SOCIETY OF ORTHODONTISTS.

The second annual meeting of the American Society of Orthodontists will be held in Philadelphia, October 8, 9, 10. Complete announcement in due time

MILTON T. WATSON,
Secretary.

270 Woodward Ave., Detroit, Mich.

[The DENTAL REVIEW wishes to call particular attention to this notice. It is a noteworthy event in dental progress when an earnest, capable body of men will travel long distances to hold a meeting devoted to a single specialty of dentistry, and furnish proceedings such as marked the first meeting in St. Louis. It is all the more wonderful when it is remembered that this department of dentistry is really of very recent birth, and still in its developmental stage. It marks more sharply than probably anything else has ever done the division of dental thought into specialties, and speaks volumes for the broadening of our field of usefulness to humanity.]

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

693,349. Dentifrice, Mordecai H. Fletcher, Cincinnati, Ohio.

693,350. Package for tooth powder or the like, Mordecai H. Fletcher, Cincinnati, Ohio.

- 693,140. Mouth mirror, Wm. E. Knight, Ostrander, Ohio.
 - 692,920. Fountain syringe holder, Gustav Schirmer, Chicago, Ill.
 - 693,162. Hot air syringe, Adolph W. Schramm and E. B. Wilford, Philadelphia, Pa.
 - 694,021. Holder for dental devices, James A. Mead, Corry, Pa.
 - 693,884. Artificial tooth crown and making same, Emil Nagy, Budapest, Austria-Hungary.
 - 35,776. Design, dental instrument cabinet, Frank E. Case, Canton, Ohio.
 - 694,526. Chip blowing attachment for dental engines, Welby W. Burgin, Richmond, Ky.
 - 694,637. Elevating and controlling mechanism, James F. Hardy, New York, N. Y.
 - 694,683. Back rest for dental chairs, Gideon Sibley, Philadelphia, Pa.
 - 694,684. Head rest for dental chairs, Gideon Sibley, Philadelphia, Pa.
 - 695,092. Dental floss holder, James W. Cowan, Geneseo, N. Y.
- Copies of the above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

COMMITTEE ON ART AND INVENTION OF THE NEW JERSEY STATE
DENTAL SOCIETY.

To all those who during the past year have invented or designed any instrument, appliance, method or operation in or applicable to the art and science of dental surgery:

The New Jersey State Dental Society respectfully solicits you to send a contribution of such article or appliance, that you have invented or designed, with a full description of the same. All appliances will be classified and receive due consideration at the hands of the society. We only stipulate that all articles sent shall be of practical value and of general interest to the profession at large. We will make an interesting exhibit under the head of Art and Invention—one that will be of value not only to the profession but also to the inventors and designers. A full report will be made and printed in the society proceedings. Send contributions by June 24 and not later than July 1, otherwise they may not receive proper classification. All appliances will be well taken care of and returned to the contributors after the session of the society, which will be held in the Auditorium, at Asbury Park, New Jersey, July 16, 17 and 18, 1902.

This year's session will be one of, if not the largest, both in interest and attendance, of any previous session of the New Jersey State Dental Society, which is known for its interesting, valuable and well attended sessions.

W. G. CHASE, *Chairman*,
1018 Witherspoon Bldg., Philadelphia, Pa.

PROGRAM OF ESSAYISTS ILLINOIS STATE DENTAL SOCIETY MEETING,
MAY 13 TO 15, 1902, SPRINGFIELD.

1. Annual address, by the President, Dr. M. L. Hanaford, Rockford, Ill.
2. Report of Committee on Dental Science and Literature, Dr. G. V. Black, Chicago.

3. Report of Committee on Dental Art and Invention, Dr. Hart J. Goslee, Chicago.
4. "Dental Nomenclature," Dr. G. Walter Dittmar, Chicago. Discussion opened by Dr. A. W. Harlan, Chicago.
5. "Professional Ethics vs. Patents," Dr. Charles E. Bentley, Chicago. Discussion opened by Dr. C. N. Johnson.
6. "Some of Our Predecessors," Dr. A. H. Fuller, St. Louis. Illustrated with electric stereopticon. Discussion opened by Dr. G. V. Black, Chicago.
7. "An Ideal Material for Filling Root Canals of Teeth," Dr. Rudolph Beck, Chicago. Discussion opened by Dr. Hart J. Goslee, Chicago.
8. "Good Fellowship," Dr. C. R. Taylor, Streator. Discussion opened by Dr. Edmund Noyes, Chicago.
9. "Preliminary Dental Education," Dr. M. R. Harned, Rockford. Discussion opened by Dr. A. H. Peck, Chicago.
10. "Conditions Modifying Extension for Prevention," John E. Nyman, Chicago. Discussion opened by Dr. E. H. Allen, Freeport.
11. "Use of Matrix in Compound Approximal Gold Fillings," Dr. Elliott R. Carpenter, Chicago, Ill. Discussion opened by Dr. Don M. Gallie, Chicago.
12. "The First Permanent Molar," Dr. J. N. Crouse, Chicago. Discussion opened by Dr. Truman W. Brophy, Chicago.
13. "Dental Conditions in the Philippines," Dr. Louis Ottofy, Manilla.

Clinics

Wednesday Morning, May 14.

1. Dr. Charles J. Sowle, Rockford, Ill. Gold filling, using matrix and separating rubber.
2. Dr. Hugh McMillan, Roseville Ill. Some convenient things about an office.
3. Dr. George W. Cook, Chicago. Individual treatment of pyorrhoea alveolaris.
4. Dr. M. R. Harned, Rockford, Ill. Cavities in artificial teeth.
5. Dr. Joseph S. Bridges, Chicago. Porcelain inlay.
6. Dr. J. J. Reed, Rockford, Ill. Cement anchorage for gold filling.
7. Dr. W. T. Reeves, Chicago. Porcelain inlay.
8. Dr. Frank S. Trickey, Freeport, Ill. Gold filling, using Vernon's gold.
9. Dr. Hart J. Goslee, Chicago. Construction of saddle for porcelain bridge and carving cusps for crown and bridge work.
10. Dr. R. J. Cruise, Chicago. Extraction and supplantation a cure for chronic alveolar abscess and pyorrhoea alveolaris.
11. Dr. B. J. Cigrand, Chicago. A gnathomer mimic, showing the philosophy of mastication.
12. Dr. R. B. Davis, Springfield. Crown and bridge work.
13. Dr. L. O. Green, Chicago. Banded Logan crown.
14. Dr. L. S. Tenney, Chicago. Gold and platinum restoration, using engine mallet.
15. Dr. Chas. P. Pruyn, Chicago. Subject to be announced.
16. Dr. C. B. Sawyer, Jacksonville, Ill. Gold filling in labio-cervical cavity, using a clamp of aluminum, own design.
17. Dr. Elliott R. Carpenter, Chicago. The extirpation of the dental pulp, employing saturated solution of cocaine.

Thursday Morning, May 15.

18. Dr. E. F. Hazell, Springfield. Gold filling.
19. Dr. J. E. Hinkins, Chicago. Subject to be announced.
20. Dr. Winthrop Girling, Chicago. Porcelain crown without facings and porcelain shading.
21. Dr. Calvin S. Case, Chicago. A new form of artificial palate.
22. Dr. Geo. B. Perry, Chicago. A method of mounting and trueing wheels for dental engines and lathes.
23. Dr. J. O. Brown, Chicago. Gold filling, Watt's crystal gold.
24. Dr. Hugo Franz, Chicago. Surgical treatment of chronic alveolar abscess.
25. Dr. Edmund Noyes, Chicago. Root filling.
26. Dr. R. C. Brophy, Chicago. Porcelain work, baking with gas and gasoline.
27. Dr. Chas. Bryant, Chicago. Continuous gum dentures.
28. Dr. Sydney Knowles, Chicago. Porcelain inlay, Wassall's method.
29. Dr. Frederick B. Noyes, Chicago. Amalgam tests.
30. Dr. G. M. Brunson, Joliet, Ill. A method of anchoring screw posts in frail roots and badly broken down bicuspid and molars.
31. Dr. Geo. D. Sitherwood, Bloomington. Treating and wiring loose teeth.
32. Dr. Grafton Monroe, Springfield. Taking impressions or "something prosthetic."
33. Dr. Frank Skinner, Chicago. Preparation of sensitive cavities, using nitrous oxide with Hurd's inhaler. Gold filling, using noncohesive gold and tin to prevent thermal changes, finishing filling with cohesive foil.
34. Dr. Geo. Appel, Chicago. Disto-occlusal gold filling, using the Ivory matrix with gold pads for protecting the enamel and gaining good adaptation of gold to the cavity margins.

NATIONAL DENTAL ASSOCIATION. ORAL HYGIENE IN PUBLIC SCHOOLS.

To each and all whom it may interest:

To invite wider attention to the important study of oral hygiene, hitherto much neglected, and the coöperation of those dentists who have already devoted themselves to the subject, the following resolution, adopted by the National Dental Association, August, 1901, is published:

"Resolved, That the president be authorized to enter into an agreement with some person or persons qualified to write a short treatise on oral hygiene, on the basis of paying a definite sum for services if the production should not be accepted, and a further amount if the work should be adopted by this National Dental Association, and that ——— dollars be appropriated for the purpose."

The suggestion toward popularizing oral hygiene, made by the National Dental Association, has everywhere been received with favor; many State and local societies coöperating. Greater efforts in behalf of disseminating oral hygienic knowledge in schools have lately been made in Alabama, "where the way is open to us;" in Florida, where the State Superintendent of Education is very favorably "impressed on the subject;" in Illinois, where the Odontographic Society of Chicago has sent circular letters to the boards of education in all civilized countries in cities of 100,000 or over, asking them concerning such a

movement and gathering data upon the subject; in Maine, "where the subject has been discussed and a committee appointed; in Massachusetts, where "a committee of five has been appointed to investigate and report the best method of getting at the condition of children's teeth in our public schools;" in Mississippi, where "the matter is in charge of a special secretary;" in New York, where the State society has appointed a committee of six, and its chairman, Dr. T. P. Hyatt, has already examined 500 children in Brooklyn and reported results on blanks furnished by this association; in Texas, where a committee from the medical society is working jointly with the committee from the State Dental Society; in Maryland, where a committee has planned for the examination of the mouths and teeth of school children, for talks to the students of high schools on the care of the mouth and teeth, and for the aid of assistants in sterilizing instruments and filling out blanks, and the Baltimore County Medical Association (as the result of a paper on the preservation of the health of the mouth) unanimously adopted a resolution recognizing the benefits of oral hygiene, approving the efforts to give instruction to pupils of public schools on the care of the mouth and teeth, and urging coöperation of boards of health and education in providing for detailed examinations and reports; in the Seventh District Dental Society of New York, where "the committee is working to the end of having suitable matter inserted in the text-books;" in Virginia, where "committees of local societies are gathering statistics and the committee from the State Association is at work;" in Connecticut, where the communication from this committee was extensively discussed, unanimously adopted and a committee appointed to confer with the school authorities; in the Duluth and Superior Dental Association, which appointed a committee to go into the schools and make the examinations, two dentists from each city; in the District of Columbia Dental Society, which sends word "We will be glad to obtain statistics for any number of examination blanks you may wish to furnish;" in the Galveston Dental Society, which writes "Send on the blanks and we will fill them out;" in the Toledo Dental Society, which has been waiting for some definite action by the National Dental Association, giving rules and suggestions so that all might work on the same line; in the Cedar Rapids Dental Society, which is willing to help if permission can be had from the school board; in Pittsburg, where Dr. Habegger obtained permission from school directors of that city to make examination of children attending Moorehead school, and examined 363 children. A significant fact in his report is that out of 1,500 children in the school only nine refused to be examined.

Helpful suggestions are solicited by the committee, which also asks that dentists will forward copies of what the school physiologies used in their towns and cities say respecting the care of the mouth and teeth. The Reading Dental Society recently investigated the text-books used in Pennsylvania (as will be seen by report in *Dental Cosmos*, December, 1901), and the chairman of this committee examined the physiologies on file at the Buffalo Exposition. Such teaching as this, for example (quoted from a physiology which has been translated into five different languages and of which several hundred thousand have been published), is not accepted by dentists as authoritative: "The teeth should be examined that if enamel is removed and decay commenced, they may be filled

with gold foil. All amalgams, pastes, and other cheap patent articles should be rejected both for the sake of the teeth and the general health." A primer intended for instruction of children in the schoolroom, teaches that "milk is a good food but it is better for the teeth after it is boiled than when left uncooked;" that "our teeth will let us have all the eggs we want but they like them best soft boiled;" that "we may have all the fish we want, say our teeth, if we only eat what is fresh and sweet;" that "the pretty red color of the cheeks and lips of the Irish are due to their habit of eating potatoes;" that "tartar affects saliva and makes food hard to digest;" that birds eat gravel and sand "to make their food digest;" and that "a dog keeps on gnawing his bone after the meat is all gone to keep his teeth clean and strong."

RICHARD GRADY, Chairman, Naval Academy, Annapolis, Md.

W. E. WALKER, Box 51, Pass Christian, Miss.

I. P. WILSON, 327 N. Fourth St., Burlington, Ia.

FRANK W. STIFF, 2101 Church Hill Ave., Richmond, Va.

Of Committee on Oral Hygiene in Public Schools.

Approved: J. A. LIBBEY, *President.*

MISSOURI STATE DENTAL ASSOCIATION.

The thirty-eighth annual session of the Missouri State Dental Association will convene at Jefferson City, Missouri, May 21, 22, 23. The literary program will be held in the Legislative Hall and the clinics, beginning at 10 A. M. the first day will be held at the State Penitentiary where an abundance of clinical material can be had. Railroad and hotel rates have been secured. A cordial invitation is extended to the profession to attend. The following is a partial list of the program:

Addresses and Essays.

1. Burton Lee Thorpe, St. Louis. President's Annual Address.
2. Wm. Everett Griswold, New York. "The Griswold System of Removable Bridge Work."
3. Frederick Brown Moorhead, Chicago. "Alveolar Abscess, its Sequel and Surgical Treatment."
4. D. R. Stubblefield, Nashville, Tenn. "Metallurgy."
5. J. D. Patterson, Kansas City. "Etiology of Dental Disease."
6. D. F. Luckey, D. D. S., Missouri State Board of Agriculture, Columbia. "Comparative Anatomy of the Teeth."
7. J. Robert Megraw, Fayette. "Dental Prescriptions."
8. Millard Lewis Lipscomb, A. M., Missouri State University, Columbia. "The Practical Application of Electricity in Surgery and Kindred Subjects."
9. S. C. A. Rubey, Clinton. "Some State Board Questions and the Answers they Receive."
10. James W. Hull, Kansas City. "Conservatism in Dentistry."
11. Herman Prinz, St. Louis. "Some of the Newer Dental Remedies."
12. Charles Gilbert Chaddock, M. D., St. Louis. "Neurology."
13. W. W. Flora, Carthage. "Use and Abuse of Crown and Bridge work."
14. Otto J. Fruth, St. Louis. Report of Committee on New Inventions and Appliances.
15. H. S. Vaughn, Kansas City, "Orthodontia."

Clinics.

M. C. Marshall, St. Louis, Supervisor.

1. Edward G. Snodgrass, Keokuk. Step filling, using Watt's crystal gold.
2. Frederick Brown Moorhead, Chicago. Surgical treatment of alveolar abscess.

3. Wm. Everett Griswold, New York. The Griswold system of removable bridge work, constructing a practical case in the mouth.
4. R. C. Brophy, Chicago. Porcelain work, baking with gasoline and gas furnaces.
5. B. Q. Stevens, Hannibal. Table clinic, method of root filling with gutta-percha and wood points and taking impressions of enlarged or undeveloped root canals.
6. A. J. Prosser, St. Louis. Methods of filling with cohesive and non-cohesive gold and tin foils.
7. F. M. Fulkerson, Sedalia. Immediate and painless pulp extirpation in anterior teeth.
8. R. H. Mace, St. Louis. The use of gold inlays in deciduous and frail teeth.
9. Herbert P. Neeper, Canton, Edward G. Snodgrass, Keokuk. Mounting Logan crown with cap.
10. F. B. Jahr, Kansas City. Preparing cavities in porcelain teeth.
11. John G. Harper, St. Louis. Table clinic, "some odds and ends."
12. J. Robert Megraw, Fayette. Treatment of alveolar abscess with fistulous opening and immediate root filling.
13. M. R. Windhorst, St. Louis. Gold fillings.
14. F. H. Achelpohl, St. Charles. The use of Teague's cavity disk cap.
15. H. H. Kennerly, St. Louis. Taking impressions of the mouth.
16. J. Denzil Bowles, Tipton. New treatment for Epules tumors, oral ulcers, etc.
17. D. O. M. LeCron, St. Louis. Porcelain inlays.
18. A. J. Prosser, St. Louis. Gold inlays swaged and burnished.
19. W. F. A. Schultz, St. Louis. Operation for necrosis.
20. R. R. Vaughn, St. Louis. Demonstrating use of archite cement.
21. Geo. H. Mathae, St. Louis. Extracting with nitrous oxide gas demonstrating new universal lower forcep.
22. A. F. Strange, St. Louis. Obturator for cleft palate.
23. R. N. LeCron, St. Louis. Construction of porcelain bridge.
24. V. H. Frederick, St. Louis. Bridge work with removable facings.
25. J. S. Letord, Kansas City. Demonstrating a new rheostat for 110 volt alternating current.
26. C. D. Lukens, St. Louis. "Orthodontia."
27. F. F. Fletcher, St. Louis. Something.
28. James W. Hull, Kansas City. Immediate and painless checking of hemorrhage.
29. Geo. H. Gibson, St. Louis. Cleansing a set of teeth.
30. Orme H. Manhard, St. Louis. A method of retaining loose teeth with splint.
31. H. S. Vaughn, Kansas City. Demonstrate the Jackson crib system for irregularities.
32. W. L. Reed, Mexico. Articulated natural teeth to demonstrate cavity preparation.
33. Henry B. Purl, Kirksville. Black's method of step cavity preparation.
34. W. W. Flora, Carthage. Richmond crown.
35. Herman Prinz, St. Louis. Demonstrations of some of the newer dental remedies.
36. L. A. Young, St. Louis. Adjusting rubber dam and filling root canals, demonstrating new rubber dam holder and aseptic broaches.
37. J. S. Letord, Kansas City. Fillings with Vernon's gold and Eoff's gold and platinum.
38. James F. Austin, St. Louis. Cavity preparation for alloy and finishing alloy fillings.

GEO. W. TAINTER,
Chairman, Jefferson City.

C. D. LUKENS, St. Louis, {
J. C. PASQUETH, Mexico. { *Executive Committee.*

THE DENTAL REVIEW.

VOL. XVI.

CHICAGO, MAY 15, 1902.

No. 5

ORIGINAL COMMUNICATIONS.

AN HISTORICAL RESUME OF THE PROCEDURES INTENDED FOR THE REPAIR OF CLEFT-PALATE, WITH MENTION OF A CASE*.

BY WILLARD BARTLETT, A. M., M. D., ST. LOUIS, MO

It has been almost a century and a half since the first operation designed to remedy a congenital defect in the roof of the mouth. In 1767 Lemonnier repaired a cleft in the soft palate and thus gained the distinction of being the first to attempt anything of the kind. From that time, up to 1816, the date of V. Graefe's first operation, the feasibility of such a procedure appears to have remained unrecognized. Indeed most writers agree that practical staphylorrhaphy and uranoplasty owe their origin to three men, V. Graefe (*Die Gaumennaht, ein neuentdecktes Mittel gegen angeborene Fehler der Sprache.—Journal der Chirurgie and Augenheilkunde.* Berlin, 1820.)—the German, Roux (*Memoire sur la staphylorrhaphie ou la suture du voile du palais.* *Arch. gen. de med.* Paris, 1825), the Frenchman, and Warren (*On an operation for the cure of natural fissure of the soft palate.* *Amer. Jour. of the Medical Sciences*, 1828), of our own country.

Wardrop and Alcock (1) were among the early operators in England, having reported an unsuccessful case in 1827, but of the pioneers in this field, Roux (2) had by far the widest experience; as early as 1828 he was able to report no less than forty cases, of which twenty-two had proven successful, while in 1854 the same author (3) could boast of having made 140 such operations.

*Read before the Society of Dental Science.

1. *Lancet*, June 16th, 1827.

2. *Monthly Journal of Foreign Medicine*, Vol. II, 1828.

3. *Quarante annees de pratique chirurgicale*, 1854.

The earlier surgeons had confined themselves to various methods of median suture, till Diffenbach (4) enriched the technique by his incisions along the alveolæ for the relief of tension.

Fergusson (5) must be credited with the next step toward making this a trustworthy surgical procedure, when he proposed destroying the motor apparatus of the soft palate, that rest might favor the reparative process. This surgeon's (6) idea was that based on purely theoretical deductions, on the other hand he demonstrated by dissections that the levatores and the palato-pharyngei when irritated to action tend to draw the edges of a cleft asunder, thus diminishing the likelihood of surgical cure. Of Fergusson's (7) first 134 cases thus treated, 129 resulted in perfect union being obtained. Our own Warren (8) had in mind a similar idea, when he suggested section of the posterior pillars of the pharynx with scissors; and Bilroth (9) many years later, aimed at the same result when he conceived the idea of breaking off the hamular process—the fulcrum of the tensor palate with a chisel.

Syme (10) was probably the first, in 1854, to object to all procedures intended to paralyze the palate, on account of their permanent ill effects; and the opinion gained ground until 1900 when Lexer (11) wrote of this step in the operation, as possessing historical interests only.

The next advance, after that of Fergusson, was made by Diffenbach (12) when he instituted the practice of chiseling off from their lateral attachments the two segments of the cleft bony arch, and uniting the same by median silver sutures, a procedure the value of which was attested by Fergusson as late as 1874 (13), when he wrote that certain cases can be successfully treated in no other way. Still the method has never been generally accepted, was

4. *Die operative Chirurgie*, Leipzig, 1854.

5. *Medico-Chirurgical Transactions*, Vol. 28, p. 275.

6. *Medical Times*, March 6th, 1847.

7. *Lancet*, June 25th, 1864.

8. *American Journal of Medical Sciences*, Vol. 15.

9. *Wiener klin. Wochenschrift*, 1889, No. 12. (Abs.).

10. *Monthly Journal*, April, 1854.

11. *Handbuch der Practischen Chirurgie* von v. Bergmann, v. Bruns u v. Mikulicz.

12. *Die operative Chirurgie*, Leipzig, 1845.

13. *British Medical Journal*, April 4th, 1874.

given unfavorable notice by Mason (14) as well as by Heath (15) and is now little used.

No *résumé* of the work done on cleft palate during the first half of the last century is complete without mention at least of Mütter (16), of Philadelphia, who had experience with a large number of cases, and who, with Liston, gave a most exhaustive and detailed description of the operative technique, as far as developed up to the appearance of their work on surgery in 1846.

We now smile at many of the suggestions made during this period which antedated anesthesia, antiseptis and exact hemostasis. Cusack (17) had very properly proposed in 1843 that no sutures be introduced till all hemorrhage caused by cutting the flaps, had ceased, but Smith (18) went rather to extremes, when a few years later he announced that he considered it best to fashion the flaps, then perform some other operation and introduce the sutures at his leisure after the first sufferer had been allowed ample time to stop all bleeding by rinsing his mouth with water. Imagine one of us affording a patient such an experience in this day and age.

In 1861 v. Langenbeck (19) emphasized the importance, in repairing the fissure of the hard palate, of making flaps consisting of the entire thickness of mucous membrane and periosteum; though J. Mason Warren (20) had done practically the same thing twenty years earlier in cutting his soft flaps; a matter which becomes obvious when one considers that it is easier to separate the periosteum from the bone than it is to divide the periosteum and the mucous membrane. It must be admitted, however, that v. Langenbeck's (21) method of elevating the flaps had a decided advantage over that of Warren, inasmuch as the German surgeon commenced at the alveolus and worked toward the median line, while our countryman proceeded in the opposite direction. At any rate the former systematized most carefully the technical suggestions of others

14. The surgery of the face, 1878.

15. British Medical Journal, November 4th, 1882.

16. Lectures on the Operations of Surgery, 1846.

17. Dublin Journal of Medical Sciences, Jan., 1843.

18. Medical Times, Jan. 19th, 1850.

19. Archiv fuer klin. Chirurgie, Bd. 11, s. 205.

20. American Journal of Medical Sciences, Vol. 46.

21. Archiv fuer klin. Chirurgie Bd. V. s. 43. (Abs.).

who had preceded him and is given the credit by most German writers at least for a procedure whose five steps will be recognized in what has been gone before. The so-called V. Langenbeck operation as quoted by Lexer (22) consists of (1) paring of median edges; (2) section of muscles; (3) making of lateral incisions; (4) elevation of flaps; (5) introduction of sutures; a method which, modified or as here presented, has been used far more frequently than has any other. As a practical illustration of what may be accomplished by it I have brought you a patient, Mrs. S., aged 39, who presented herself for operation on the 2d of April,



1901. She had a median cleft which began just behind the intact alveolus and extended through almost the entire hard palate. According to her account the fissure did not exist prior to her second year, to which must be added the opinions of three prominent gentlemen, a laryngologist, a dermatologist and a dentist, that the seam in the roof of the mouth was due to inherited lues. However, the two casts show no trace of the patient ever having had a right lateral incisor; this as well as a study of her profile forces me to the belief that the entire affliction is of congenital origin.

22. Handbuch der Prac. Chirurgie, von v. Bergmann, v. Bruns u v. Mikulicz.

I performed what has been termed the Langenbeck operation, inserting six or eight silver wire sutures which were left in for a few days. There were no post-operative complications. Every stitch held and the fissure healed from end to end by primary intention. In seven months the lady's voice has improved markedly, though you still notice a certain vocal defect which is always present in those who have learned to talk before the operation is performed.

Davies Colley (23) introduced a most striking perversion of the original v. Langenbeck idea, when he succeeded in bridging the



cleft so to speak, by a flap which was reflected diagonally across from one side to the other; a method which could have accomplished but little, in one of those cases with a high, steep arch, which Pollack (24) mentioned as responding so kindly to treatment by the five steps just detailed.

The dangers and difficulties of the operation were minimized at one stroke by Rose (25) when he taught us to perform it with the patient's head hanging off the table and while some surgeons have

23. *British Medical Journal*, Oct. 25, 1890.

24. *Medical Times and Gazette*, Feb. 8th, 1862.

25. *Archiv fuer klin. Chirurgie*, Bd. XVII s. 462. (Abs.).

never become convinced of the utility of this method, still it seems that far the greater number of those who have given it a trial, are now numbered among its admirers.

On account of the well known difficulty in introducing and tying the sutures used in such operations, many ingenious instruments have been devised by Gibson (26), Heath (27), Price (28), Rawson (29) and others to facilitate this part of the work and while the subject of the instrumental aids is under discussion it must be noted that Suesmuth (30) improved, by use of prosthesis, the articulations in thirteen cases, in which the operation had resulted favorably as far as wound healing was concerned. Furthermore, application of irritants like cantharides (Diffenbach) or nitric acid Mason (31) have been exceedingly useful in exciting granulations to fill a cleft which had been small originally, or partly closed by an operation.

Even partial closure has long been estimated of value in these cases, in fact Warren (32) brought the movable halves of the soft palate together, in cases where the cleft in the bony structures was too great to admit of repair as he said; though Field (33) wrote later that he could imagine no defect too great to be overcome by persistent efforts, still others have encountered cases in which the difficulties at hand made it seem more feasible to close the osseous arch at one sitting and the soft one at another as Collis (34) long ago advised.

To Brophy (35) belongs the credit for the most ingenious and logical method which we possess for correcting this malformation, during infancy. Departing from all the traditional procedures he went deeper than any of his predecessors, and sought by directing nature's efforts in the proper channel to prevent the persistence of a defect; every other surgeon had regarded the divergence of the bony parts as inevitable and, as I have shown above, contented him-

26. Institutes and Practice of Surgery, 1845.

27. Lancet, Dec. 18th, 1858.

28. Medical Times and Gazette, June 9th, 1860.

29. Medical Press and Circular, Feb. 2d, 1876.

30. Inaug. Diss., Greifswald, 1897. (Abs.).

31. Lancet, July 29th, 1876.

32. American Journal of the Medical Sciences, Vol. 26.

33. Medical Times and Gazette, Jan. 18th, 1862.

34. Dublin Quarterly Review, May, 1856.

35. Dental Cosmos, April, 1891.

self with merely bridging the same. Brophy's procedure is well known to most of you. It consists in short of wiring together over lead plates outside the alveolus, the *superior maxillary* bones which show no tendency to unite in the median line by their palate processes.

Thus it will be seen from the above that a large number of operators have attempted in different ways to remedy the defect by autoplasty. On the other hand many cases have been successfully treated by transplanting into the cleft portions of tissues other than those which helped to form the imperfect vault. So varied and ingenious have these procedures been that one can but admire the daring of their authors. Gersuny (36) took a flap from the tongue and Shoenborn (37) one from the posterior wall of the pharynx, while Passavant (38) sewed the uvula to the pharyngeal wall, to help shut off the cavities of the nose from the mouth. A flap from the cheek was used by Delarme (39), one from the lip by Rose (40) and one from vomer by Lannelongue (41). Even more striking seems the procedure of Kraske (42) who succeeded in relieving a patient by sewing two inferior turbinated bones into the gap. Blasius (43), Rotter (44) and Bardenheuer (45) went even further from the seat of trouble and took from the forehead flaps with which they managed to accomplish the desired end.

Most sensational of all the heteroplastic operations, however, were the two performed by v. Esselsberg (46). In the first he bridged the chasm with a flap removed from the patient's forearm, while in the second he obtained a most admirable result by sewing into the cleft his patient's little finger, the same being amputated twenty days later.

36. See V. Eiselsberg, Archiv fuer klin. Chir. Bd. 64, Hft. 3.

37. Archiv fuer klin. Chirurgie, 1876. Bd. 19. (Abs.).

38. Archiv fuer klin. Chirurgie, Bd. VI (Abs.).

39. Bulletins et Memoires de la Societe de Chirurgie, 1879. (Abs.).

40. Archiv fuer klin. Chirurgie, Bd. XXIV. (Abs.).

41. See La Dentu in "Traite de Chirurgie," 1897. (Abs.).

42. Beitrage zur klin. Chirurgie, Bd. 14.

43. See V. Eiselsberg, Archiv fuer klin. Chirurgie, Bd. 64. Hft. 3.

44. Bericht der Verhandlung des 18 Congresses der Deutschen Gesellschaft fuer Chirurgie. (Abs.).

45. Bericht der Verhandlung des 21 Congresses der Deutschen Gesellschaft fuer Chirurgie. (Abs.)

46. Archiv fuer klin. Chirurgie Bd. 64, Hft. 3.

As cleft plate and harelip are so commonly associated there arises frequently the question as to which shall be repaired first and by far the greater number of authors have agreed that the lip should be sutured during infancy and the more severe operation undertaken at a later period. Branth (47) as well as Brophy (48), however, have lately taken the decidedly logical view of the matter and advanced the idea that the lip should be attended to last as by so doing the operator leaves himself decidedly more room through which to accomplish the more difficult work within the mouth.

Kingsley (49) has said that adults outgrow all the troubles in deglutition to which infants thus affected are subject. Hence there remains as our chief consideration in undertaking the repair of cleft palate; the improvement of the voice and the age at which the operation is to be undertaken must be that which favors the end in view. There can be no question that the results in this direction have been better the younger the person operated upon. Still so many arguments have been advanced for and against early operation that the ideas of numerous authors must be considered before one can arrive at a definite conclusion on the point.

Beely (50) says that most of the operations on young children prior to the year 1880 were unsuccessful and Fergusson (51) advised waiting till the adult age, because the hard palate takes less part in the deformity. The chances of success are said by Marsh (52) to increase as the age of the child advances, a circumstance which Warren (53) and Liston (54) also emphasized long ago when they advised that no operation be done before the patient has reached the age of discretion and is willing to submit to pain as well as voluntarily aid the surgeon in his work. A number of other surgeons have specified precisely in figures what they considered the age of election. This is with Roux (55) sixteen years,

47. New York Medical Journal, Aug. 10th, 1901.

48. Dental Cosmos, April, 1901.

49. Lancet, Dec. 7th, 1864.

50. Gerhardt's Handbuch der Kinderkrankheiten, Bd. VI, Abth 2.

51. Medical Gazette, Dec. 20th, 1844.

52. Lancet, July 7th, 1888.

53. American Journal of the Medical Sciences, Vol. 46.

54. Liston's Practical Surgery, 1842.

55. Quarante anne'es de pratique chirurgicale, 1854.

Gross (56) fifteen years, Trelat (57) seven years, Delbet (58) six to seven years, Mason (59) five to six years, Koenig (60) four to six years, Annandale (61) two years, Wolff (62) ten months, Brophy (63) and Fergusson (64) under three months. The attempt should be made in general say Smith (65) and Karinski (66) as early as the child's state of nutrition will allow it to be risked, while Malgaigne (67) gave a practical exposition of his views on this phase of the subject, when he did a successful operation nine hours after the birth of his patient.

This backward glance over the history of palate surgery forces the writer to the conclusion that the Brophy operation is for its purpose the best procedure at our command inasmuch as it is the only one which gives to the bony arch its proper breadth; the only one which can by reason of the slight hemorrhage caused and the little time required be performed upon a poorly nourished child at a period when the perfect vocalization must be secured or the golden opportunity forever lost.

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56. *A System of Surgery* (Gross), 1864.
 57. *Revue de Chirurgie*, 1885. (Abs.)
 58. *Lecons de Clinique chirurgicale*, 1899.
 59. *St. Thomas Hospital Reports*, Vol. VII., P. 61.
 60. *Koenig's Lehrbuch der speciellen Chirurgie*, 1898.
 61. *British Medical Journal*, Dec. 2, 1893.
 62. *Archiv fuer klin. Chirurgie*, Bd., 33 u. 34.
 63. *Dental Cosmos*, April, 1901.
 64. *British Medical Journal* March 28, 1874.
 65. *Medico-chirurgical Transactions*, Vol. 51, 1868.
 66. *Die chirurgische Krankheiten des Kindesalter* (Karewski), 1894.
 67. *Dublin quarterly Journal of Medical Sciences*, Vol. 1, 1846.
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THE COLLEGE BRED DENTIST AND HIS DUTY IN
GUARDING THE NAME OF HIS PROFESSION.*

BY HUGO FRANZ, D. D. S., CHICAGO, ILL.

Professor Miller, of Berlin, at a recent dinner given in his honor in this city, said, among other things: "To-day we require dentists not only to be men, but men of scientific education." If the speaker meant by "we" the body of men who were present representing as they did the dental profession in the word's best sense, he was right in assuming that this requisition was asked by everybody in the room. Alas, we are sorry to admit that not every so-called dentist, or one who makes a pretension to that name, is honestly standing on that ground, and what counts more, the public at large does not realize that only a most carefully trained man, with more than a mere mechanical knowledge of a trade, comes in any way near to being able to take care of his patients in the proper manner. This latter condition, to my mind, is the chief source of the much-talked-of laxity of the laws regulating the practice of dentistry in many States of the Union.

To avoid misunderstanding and the danger of discussions foreign to the real scope of this paper, I want to state distinctly that when I refer to the turmoil in the laws of the United States, I do not claim that in any other country we find provisions greatly superior for the purpose of regulating the practice of dentistry. But we should never point out the splinter in our brother's eye if we cannot take care of the beam in our own.

It is not many years since I first made the acquaintance of the dental profession of the United States, or began to realize by my own observations what rapid strides it was making in every direction of its vast field, and see with my own eyes what I always had heard, i. e., that the American profession was leading the dental world. There is no doubt and no dissenting voice. The merits of American methods are unanimously acknowledged everywhere and the American dentist can boast of accomplishments in the practical application of his skill and dexterity which put him in advance of all his foreign confrères. Indeed, the American dental profession can be justly proud of its achievements, not only in the operating rooms of individual practitioners, but also in its educational advancement. It is a revelation to any foreigner to go through our schools and inspect their equipments, and to meet the spirit of the faculty as well as that of the

*Read before the Chicago Dental Society.

students. The very air of our schools breathes sincerity and earnestness of purpose, the like of which you would have to travel far and wide to find. Just think for a moment of the average raw material that is brought to these institutions, and then see the finished product as it is turned out after a systematic process of curing. Indeed, the changes wrought, and the results accomplished are frequently marvelous.

But mine is not the gift of flattery. I have ever been stubbornly scrutinizing with friends whose character and endowments endear them to me. I believe that you should love a friend, but not worship him, and that whomsoever your faults do not offend never has he loved you. This is the spirit which prompted me to write this paper for the Chicago Dental Society. I want you to consider with me to-night the college bred dentist; to see where collectively and individually he falls short of doing his best to standardize the name of his profession.

Under the name of college bred dentist I imply the man who has graduated from one of the dental schools acknowledged by the profession at large as being reputable. And to go right *in medias res*; the organized dental profession of to-day under no circumstances ought to accept a man as a full-fledged member of any of its incorporated societies unless he is a graduate of one of the colleges belonging to the National Association of Dental Faculties. This, gentlemen, is the least which college bred dentists collectively can do in reciprocating the earnest endeavor of dental educational institutions of this country to raise the standard of their graduates. It is our manifest duty to give them at least this moral support. We can do no more at present. The laws are against us, but for that very reason this little ought to be tenaciously and fearlessly lived up to. When the American dental profession displays any standard whatever, it is not the achievement of laws; it is the result of the training and the spirit disseminated by our colleges.

If the dentist of to-day is required to be a man with a scientific education, it becomes necessary to make college education compulsory. It is impossible for a man to go single-handedly at the task of acquiring a manual and mental training, such as dentistry exacts from him to-day. The equipment of a good college is absolutely necessary to turn out men who can be reasonably relied on to do justice to the demands of modern dentistry. It is a mistake, far-reaching and utterly destructive to the name of the American dental

profession in foreign lands, that it is possible for any and every man, no matter what kind of training and schooling he has had to be able to go before the Board of Dental Examiners in most States, and be admitted to the list of applicants for taking an examination. The Board, in case such candidate happens to answer certain questions satisfactorily, will give him a certificate enabling him to practice dentistry under the same legal privileges as the man who has the advantage of a good college training. Any man holding a State Board certificate is a full-fledged dentist under the law. The title of D. D. S., at least in Illinois, is in no way legally protected beyond the fee of \$25, which degree-issuing institutions have to pay for a charter. This possibility degrades and demoralizes all American educational institutions, good or bad, in the eyes of outsiders who cannot understand how the laws of a great nation like the United States can be so void of realizing the gravity of such laxness.

The very latest developments in the unhappy controversy grown out of this insufficiency of the laws have shown that it is practically impossible to bring men to justice who, through loop-holes left by legal flaws, do ill to the profession.

In the face of all this, is it not well to ask the question, Who is responsible for these inefficient laws? It is the citizen himself; it is you and I, and our patients, and their friends, and friends of theirs, who have not awakened rightly to the fact that, in order to do justice to his profession and his clientele, the dentist has to be a man with a scientific education, that is, he must be a college bred man. And, again, we ask: Why is it that the citizen thus cuts his own throat? This time the burden falls on the college bred dentist himself—on the dental profession, which, in the essentials, stands unflinchingly for the highest standard attainable, but which forgets in a spirit of self-sufficiency, that in this age it is sometimes necessary to put up a bitter fight for a righteous cause. The college bred dentist ought to show in every move the undaunted spirit and conviction to demand a good and respect-compelling college education from every man upon whom the right to practice dentistry under the name of a "dentist" is conferred. Two different gauges for the measuring of a man's ability to practice dentistry under the law must not exist. It is a farce, and it is a pitiable lack of proper judgment when organized human society in their laws tolerate such a discrepancy.

In the United States provisions in these premises are not made by men who are exclusively trained for the green cloth. They are men

who in the first place are supposed to have their forefingers at the public pulse. If they fail, it is for one of the two following reasons: Either they are dishonest, or insincere, and misuse the public trust, or the public fails to provide them with an unmistakable sign as to their wishes and desires. The latter I believe to be the case in regard to dental laws. The public has failed to give the necessary instructions, and legislators are at sea. The proper man, though, to instruct the public is the dentist. He alone is able to know what is needed and to instruct his fellow-citizens accordingly. Has he done so? No.

It is not for want of the proper ability among dentists that the public has remained uninstructed concerning dental issues. It is on account of the dentist himself not recognizing the necessity of going before the public in his own behalf—no, I should say—in the people's behalf. You find dentists and physicians piling argument upon argument for the support of this or that special cause or individual, but where have you ever seen a dentist get up on the stump to argue for dentistry, pure and simple? But no, do not let us go as far as the stump. Only comparatively few of us could do justice to the question there. Let us ask, What have you done in your own practice, among your own clients, to enlighten them on the question of proper legislation for the practice of dentistry over this broad land? You have probably done very little, and yet every one of us, no matter how weak his argumentative power, could do much in furthering the cause. After a satisfactory operation, when conditions are favorable, and they frequently are so, let the dentist drop his instruments and for a distraction lead his patient to realize what is necessary to make a man competent to practice dentistry. It is not necessary to refer to your own services, or your ability as an operator. With a little diplomatic skill you can generalize, and can impress upon the patient that it is not the chase after personal gain that prompts you to enter upon such expositions, but that it is for the sake of dentistry, as your profession, and for the public benefit that you choose to talk. But you must talk enthusiastically. At the present status of our existence as a profession, we are badly in need of the enthusiast. It takes the enthusiast to carry the day in any kind of strife. The half-hearted and lukewarm is but a millstone to the cause. And if your quieter and more aristocratic tendency induces you to refrain from argument, remember that yours is a democratic government, i. e., a government in which the people rule, and in order that they may

rule justly they must be instructed; and, furthermore, that whoever can give proper guidance has no right to put his light under a bushel, where it will do nobody good, not even himself.

Our forerunners in professional life and our elder brothers of to-day have done great things in meeting the demands of their time most successfully. If they had failed to do so the American dental profession would not occupy the place it justly assumes to-day. But the work of our ancestors was done at a time when the United States in its development was sequestered from all the rest of the world. Recent events show that Columbia has passed her evolutionary stage, and impress the rest of the world with the fact that she stands a finished product as far as her intrinsic and spontaneous development is concerned, ready to keep in close and inspiring contact with the outside world. This is from the political point of view. But with this very advance every citizen of the United States must realize that new duties are to be assumed, and that it is his lot to meet the emergencies of the changed position. These emergencies develop in every walk of life, and except this is realized, you will fail as citizens to follow up the advantage gained by your armies and your statesmen. The tradesman, as well as the professional man, must pick up the Stars and Stripes and carry them on his part into foreign lands, in peaceful strife with new messages to the people, just as your armies and your navy have carried them of late into Cuba and Porto Rico, and in time will successfully plant them on the far shores of the Philippines, carrying new ideas of government into regions in which an older regime has outlived itself. This peaceful conquest is the nobler. It is worthy of all the brain and brawn of a self-respecting nation.

So far as the professions are concerned, I cannot think of another one more capable at this time of carrying the banner successfully than our profession, the true Dental Profession of the United States. It seems to me the dentists and citizens of the United States are slow in awakening to the needs of this emergency. In the Old World we find rigid standards of graduation in all the departments of academic teaching which can be unconditionally relied upon. They are not alone unanimously accepted in the home country, but they are also acknowledged in foreign countries. Why is it that this latter courtesy does not meet with the desired reciprocity for American graduates? Is it the fault of foreign countries harboring unjust prejudices, or are the conditions in the United States

responsible for such a one-sided state of affairs? The answer is clear, and I say to you from personal experience and observation that this reciprocal acknowledgment of American graduates and their several degrees by foreign governments will never come unless the United States' laws themselves will standardize in a similar way the requirements for the entrance into the practice of any of the professional callings. For a little more than a century the principal and most successful issue in this country was that of national politics. The results of an entirely new political evolution occurring in the United States manifested themselves not only here, but every civilized government has experienced a new impetus of one kind or another from events which constitute the history of the United States. In the solving of many questions pertaining to modern government, the parliamentary, as well as legislative bodies of European monarchies have grown accustomed to look for precedence to the United States. But in this hot controversy of political issues many other questions vital to human society have not received the due measure of attention by the American nation. Among many other things it is especially the *Res Publica Academica* which has been treated like a step-child by this government. The latter up to this time has absolutely refused to foster it in any material way. It has been allowed to suffer the exposure of the wind and weather of a constructive period, a period in which only a very small set of citizens in a private way found time to spend their efforts in its behalf. This very day it stands shivering and homeless in the cold as far as any endeavor of the government goes in trying to lift it upon a pedestal where it can compare favorably with its older sisters in foreign lands. The history of bygone nations, and that of the great nations of present Europe, shows that art and science need the protection of a sound and strong government to develop and flourish. Without this protection art and science are at the mercy of the rushing tide of a materialistic world, and in this tide it is bound to suffer harm and degradation. If foreign governments have found it necessary to discriminate against American graduates in general, and particularly against American dental graduates and their degrees, in spite of the acknowledged fact that American dental skill and education are leading the world, there must be and there really are grave reasons and severe grievances for which we alone are responsible. The National Association of Dental Faculties and many single individuals have merited the respect of everybody at home and abroad; but they alone will never be able to uproot

all the evils, unless the government of the United States gives additional color to their honest endeavor. Yet the first impetus toward a change in laws must originate with public opinion and sentiment, and to that end the citizen must be instructed. And again I say: Let the American dentist, collectively and individually, set out to instruct his fellow-citizens by every legitimate means, and with all his might. But that his argument may have sufficient strength, he must look well to his own doings. He must be willing to uphold by all the means accessible at the present time a certain well-defined standard, at least within the organized profession, that he by so doing may set an example for his fellow-citizens to judge by. Let the better spirit and the healthful suggestions of the National Association of Dental Faculties be our guide in this work; let the organized dental profession gather under this banner as one man; let us keep our ranks free from pollution.

I wish every one of you would take time to read the last report of the Foreign Relation Committee, read before the National Dental Association, in Milwaukee, and printed in the October number of *THE DENTAL REVIEW*. It is sound in spirit, courageous in conviction, and full of healthy suggestions. There are many of you who have indeed a high conception of your duties as dentists toward the human race. In that conviction you will do your work at the chair and in the laboratory unfalteringly day by day, and in so doing you are indeed a credit to your profession; but unless you are willing to step forward and offer practical support in our struggle for the right, you are not doing all you ought to do. After such a report as this of the Foreign Relation Committee, indifference on the part of any one of you becomes a crime.

In order to make us strong enough to bring about this reform a great number of things will have to be changed, so that we may all work in conjunction toward one end. Up to to-day the National Association of Dental Faculties, the Protective Association and similar bodies have struggled for years, more or less single-handed, without receiving the unanimous endorsement of the organized profession. That the best results may be reaped the organized profession and above representative bodies of men ought to be absolutely co-operative. Rules and regulations must be adopted by both which make them responsible toward each other to such an extent that we will stand as one man and one mind. And then we must work, work honestly and sincerely, and never tire, for the task is indeed difficult

and exasperating. Resolutions alone will not do. Let us watch the signs of the times most vigilantly; let us accept all reprimand with a view of analyzing it carefully so as to receive its inherent and useful suggestions; let us develop that courage which is rooted in an honest will at all times and under all circumstances. *Fratres, in hoc signo vincemus.*

CROWNS WITHOUT BANDS.*

BY F. E. ROACH, D. D. S., CHICAGO, ILL.

It is not my purpose in this brief paper to make an attack upon the banded crown with dowel pin, as it is made by the better class of operators to-day, but rather to point out some of the cases in which bands, in my opinion, are unnecessary and why in certain cases the elimination of band is advantageous.

While I do not advocate dispensing with bands altogether, I do believe that a large per cent of the six upper anterior teeth may better be conserved, with more artistic results, by the adjustment of crowns without bands.

You will probably accuse me of going back to a method long since abandoned, and I am ready to admit that I have. But that the unbanded crown has a field of usefulness there is no question in my mind.

You have all seen cases of failure and irreparable damage resulting from crowns without bands; but you have assuredly seen the same thing with banded crowns. You will probably argue that the per cent of failures of the unbanded is greater than that of the banded and that therefore it should be abandoned. I say no. There is a reason for these failures, and my efforts in this paper will be directed to showing the weak points in the bandless crown, as it is commonly adjusted, with some suggestions on how to overcome them.

I make no claims to priority of ideas but have striven to combine old and new ideas and have adapted them to this form of crown in a manner that has proven to me a success.

I will define what to my mind constitutes the prerequisites of a successfully adjusted bandless crown. The root and canal preparation must be that which will secure for the root the maximum of strength; a flat post, equal in length that of the crown, snugly fitted to root canal; good adaptation to end of root, and finally adjusted and

*Read before the Chicago Dental Society.

set so that there will be perfect continuity of crown with root and the joint between so sealed with an insoluble substance that it will remain permanently impermeable to the secretions of the mouth.

Some one or more of the following conditions are found to exist when failure of unbanded crowns is presented. The post has either broken, pulled out or stretched until the crown is out of alignment with the other teeth and a yawning space is left lingually for the invasion of decay, or the irreparable has occurred—the root has split.

I have found that some one or more of the following mistakes had been made in all cases of failure that have come under my observation: A short round or square post was used; a large round hole had been made for post; base of crown was poorly fitted and cement used for setting. These are the pitfalls of the bandless crown, and to avoid failure we must go around them.

First of all, we will consider root preparation: We must have the foundation right if we expect the superstructure to stand. The root must be trimmed to conform to and lie under the free margin of the gum. A root so trimmed should present a convex surface and not a flat surface at right angles with the long axis of the root. This shaping of root is desirable for the following reasons: The root is stronger, the joint is under the gum out of sight and in an area immune to decay. And the peridental membrane is not impinged proximally, as would be the case where the attempt is made to trim root below gum lingually and labially and then cut straight across, making the end of the root flat. Proper shaping of the root canal is of vital importance. This with a correspondingly shaped post is the most potent factor entering into the success of this kind of crown. The form of the canal and post shown in models I think you will find upon close inspection and comparison to be unusual, and I want to call your attention to that feature especially, and emphasize its importance. Until recently there was not a root canal reamer made that approached the requirements. They were all very much too large. The Dental Protective Supply Company has recently put upon the market a reamer similar to the "Fellowship" twist broach, which, when used in connection with that most excellent broach, a canal can be enlarged to almost any depth desired without danger of perforating the side of root. After locating and enlarging the canal with a large size twist broach the engine twist reamer should be used to ream out the canal labially and lingually only, making a very narrow deep hole, slightly larger at each extremity. The advantages of such canal preparation

for the post must be obvious. The root is not weakened as in the case of a large round hole, and a post of a given size flattened and fitted to such a hole is very much stronger and more rigid than one made of round or square wire as the force is applied edgewise. The length of post should be, in all cases, equal to that of the crown. And in the teeth indicated for this form of crown I have found that it is possible in most cases to make the post considerably longer than the crown. Having root and canal prepared, we will now fit cap-disk and post. In cutting off what remains of the natural tooth crown, it should be left flush with gum until cap-disk is fitted to outline of root at this point. As a flat post is desired, we will cut one from a piece of iridio-platinum plate 22 or 24 gauge (being careful to cut with the grain), batter edges slightly and fit to canal. The post may also be made by rolling out a piece of square wire to the desired thickness. We will now cut a piece of platinum plate 30 gauge, slightly larger than end of root and with some sharp flat pointed instrument punch a small hole to correspond with center of root canal; force post through disk into canal far enough to hold disk in place until outline of end of root is obtained by burnishing around edge; remove and trim disk to outline indicated on reverse side. And now, with safe edge root facer trim root below gum all around; replace post with cap-disk and carefully fit to end of root; remove them and solder together, after which they are ready for a final fitting. The crown may now be finished in any way desired.

Having made the crown, we now come to another very important part of the operation—that of final adjustment and setting. For this form of crown gutta-percha is certainly the ideal material for setting. This form of crown is also ideal for the manipulation of gutta-percha, each being well adapted to the other. And I want to say by way of emphasizing the importance of using this material, that I consider it indispensable, and that no bandless crown should be set without it, at least between the base of crown and end of root. My preference is for gutta-percha entirely, but in some instances it may be permissible to use cement in canal around the post only.

In using gutta-percha some little patience and perseverance is required, but when properly used, the results are in every way far more satisfactory than with cement.

My method of final adjustment is as follows: A sufficient quantity of gutta-percha warmed and formed into a cone around the post is forced, with a steady pressure, almost to place on root, remove and

with hot instrument trim off excess, warm again and force entirely to place, remove again and with stone mounted in engine trim the slight excess of gutta-percha together with base of crown to outline of root indicated in the gutta-percha. When I speak of trimming base of the crown, you will remember that the crown was made on the cap-disk that was cut the size of root at gum margin, and which, of course, is larger than end of root after it was cut off below the gum. By this means we get perfect continuity of crown with root, so that there will be no projecting shoulders of either crown or root to act as an irritant to the gum.

The teeth I find to be most favorable for this class of crown are the upper cuspids and centrals. Many other teeth, in judiciously selected cases, may also be crowned in this way.

In any of the anterior teeth where the bite is very short and it is desirable to make a porcelain crown, it is certainly advantageous to leave off the band, when by so doing about two millimeters can be added to the length of crown. In such cases it is folly to band and reinforce a strong root, when it is at the expense of a frail crown.

As the success of this crown depends so largely upon gutta-percha, a few suggestions on its manipulation may not be amiss:

Be sure the apical end of the root is thoroughly sealed. Do not dry canal until crown is fitted, after which it should be dried, slightly roughened with small wheel bur, wiped out with cajeput or eucalyptus oil, and crown with gutta-percha slightly warmed, is forced to place. Care must be taken not to suddenly heat post in porcelain crowns without previously warming the porcelain, as the expansion of the metal may cause a fracture. Do not heat the gutta-percha red hot and try to force crown to place at once as you would cement. Remove and slowly warm repeatedly until it goes to place. Too much heat destroys the life of gutta-percha, leaving it but little better than cement.

Like amalgam, this form of crown has been abused because it is easier to make. But to my mind a porcelain crown made in the way I have suggested and set with gutta-percha, is the ideal crown.

THE USE OF GOLD IN CAVITIES LOCATED IN THE CEMENTUM.*

BY J. G. REID, D. D. S., CHICAGO, ILL.

I have been exceedingly perplexed and many times embarrassed at my endeavors to satisfactorily preserve teeth whose cavities appear partly or wholly within the cemental tissue of those organs. I have likewise been surprised at the apparent utter disregard of a special classification of cavities located in this special tissue. A clinical experience of several years forces me to the conclusion that nowhere do we meet with so many failures proportionately as in the particular localities mentioned. In speaking of these cavities I am not unmindful of the fact that they have been referred to or included in a classification under the head of buccal cavities. Instructors as well as writers in the field of operative dentistry do not seem to deviate or vary the operative procedures in this class of cavities from those followed in cavities found in other localities about the teeth. Insofar as the preparation of the cavity is concerned there can scarcely be any variation, but when it comes to adapting certain filling materials to the walls of cemental cavities then I believe a question can be interposed, especially as to how it may be done to insure the greatest success.

TREATMENT.

When the gum tissue has once begun to recede or depart from its normal position about the neck of a tooth or teeth, invasion of caries in the majority of instances takes place. The cementum being deprived of its natural protection, becomes a vulnerable point for carious processes. The adoption of diligent and careful hygienic measures on the part of the patient in some cases may prevent the occurrence of caries, but usually when the cementum once becomes exposed, sensitiveness is aroused and the former care of the teeth, especially at the points indicated, is neglected. It is also about this period that the patient becomes apprehensive of some impending danger, and the dentist is consulted sooner or later. If later we may find ourselves confronted with a few cavities which I am free to admit cause me mental anxiety.

A line of treatment is mapped out. The judgment of the operator may lead him to resort to an application of silver nitrate to places that are not exposed to view—in some cases certainly not a

*Read before the Odontological Society.

bad practice. The employment of this agent does not always meet the requirements; in fact, so far as my observation goes, we can only expect temporary arrest of caries. I believe better results may be obtained by using the above agent within the cavity preparatory to the introduction of a filling, especially if it be one of gutta-percha.

The employment of gold as a filling material in the localities now under consideration, has to my mind proven a failure in a larger number of instances than we might expect at first thought. Failure is not to be attributed to the material so much as it is to lack of care in the methods of introducing it into the cavity.

For me to enter into a minute anatomical description of the cementum for the purpose of making what I have to say more impressive seems useless, as I believe you are all familiar with this structure, and it is sufficient for me to allude to it as bearing a resemblance to true bone in most of its characteristics. It possesses a membranous covering the same as bone, and the nutrition of the cementum comes through this channel; therefore it remains to be said that certain physiological processes will take place the same in cementum as would in bone when both are subjected to like treatment. Example: If you should bore a hole in a bone and attempt to seal up that artificial cavity by pounding into it some metallic substance commensurate with its adaptation, what would be the result? "The plug would be loosened in a very short time by a process of absorption. If we drill into the bone for the purpose of attaching apparatus for holding the ends of a fractured bone together and place gold, silver, iron or what not into the bone, we find that they will hold for only a short time; absorption will occur about them and they will be loosened. Continued and undue pressure upon bony structure causes absorption." This is fully exemplified in the movement of teeth looking to the correction of irregularities.

A citation of these few examples leads me to question the best results when we use undue force in impacting gold against cavity walls in the cementum. I am led to believe that just in proportion as greater force is exercised in the introduction of gold into those cavities, just in proportion do we endanger the liability of absorption in that tissue. I have observed where circumstance would permit experimenting, that in those cavities where I made it a special point to pack the gold by the use of heavy blows with the mallet, there would appear in course of time a slight crevice at the circumference of the filling, which I could attribute to no other

cause than to a process of absorption. I have further observed that wherein hand pressure was the exclusive force employed in condensing the gold there appeared much less evidence of absorption, if any at all.

I believe you will bear me out in these statements when you come to observe that gold fillings finished to an uncriticising perfection will exhibit at some future time a certain defect whereby an instrument may be hooked over the margin of the filling, thus to my mind indicating some physical change in the neighboring tissue. In conclusion it is the opinion of the writer that when gold is used for stopping cavities in the cementum the force employed to pack the material should be just sufficient to insure perfect adaptation and no more. If our plastic filling materials were only reliable they would be ideal in so far as results are concerned. It is barely possible that the employment of inlays may do much better service than anything now in command. I am somewhat disappointed in not being able to present this subject in a more careful manner at this time and only hope that you will not spare any criticism on what may appear to be a false theory.

CHEMISTRY OF BLEACHING TEETH.

BY J. P. BUCKLEY, PH. G., D. D. S., CHICAGO, ILL.

(Reply to a criticism by Harold Clark, D. D. S., and Harold Von Der Linde, F. C. S., published in February number, 1902, of *Dominion Dental Journal*, Toronto, Canada.)

In replying to a criticism of a paper which I read before the Odontographic Society of Chicago, April, 1901, it may be advisable first to state that my motive in presenting the paper at that time was for the sole purpose of arousing thought along the line of a very important, but much neglected, phase of the subject of bleaching teeth—namely, the *true* cause of the discoloration from pulp decomposition.

I fully realize that in trying to solve this problem, from the chemical point of view, we are confronted by many difficulties, and that whatever chemical theory is advanced must be confirmed by clinical observation. As to my conclusion on the cause of the discoloration and the chemical theory on which it was reached, I desire to state that the chemistry involved in the reactions is based upon

sound chemical reasoning and long established chemical facts, notwithstanding the opinion of my critics to the contrary.

They have divided my paper into three general heads:

1. The Chemistry of Discoloration.
2. Chemistry as Applied to the Bleaching of Discolored Teeth.
3. The Chemistry of Bleaching Agents.

On each of these heads the authors "propose to show that the facts adduced are, in a large measure, not borne out by laboratory investigation; and it is further proposed to show that the author has, by relying upon the work of others, been led to make statements that are chemically inaccurate."

1. The Chemistry of Discoloration.

Under this head objection has been made to my conclusion—namely, "That the discoloration is due, in all probability, to the formation of ferric hydroxid and ferrous sulphid, both being dark substances and formed according to the reactions above explained." In opposing this conclusion we are told that the source of iron is hemoglobin, which forms only a small proportion of the pulp substance, and that as "the pigmentary power of ferric hydroxid and ferrous sulphid is not great, it will easily be seen that, quantitatively, these compounds are present in insufficient quantities to account for the change in color." And again, "That the colors of these compounds do not correspond to the usual tooth discolorations." My reply to the first argument is this: When a pulp dies it has passed through certain pathological processes, one of which is inflammation, at which time diapedesis takes place, and congestion follows. We have, then, in the dead pulp tissue, previous to suppuration, not only the inflammatory exudate, consisting of blood corpuscles and fixed tissue cells, but also an abnormal amount of blood, which shows the source of iron to be greater than has been considered. As to the colors of the compounds—ferric hydroxid and ferrous sulphid—not corresponding with the usual tooth discolorations, I would suggest that those who are sufficiently interested make a mixture of three colors, approximating the colors of ferric hydroxid (reddish brown), ferrous sulphid (black), and dentin (yellow), in varying proportions, and view the mixture through a white, transparent substance, resembling enamel. By this means it can easily be ascertained whether or not the colors can be obtained, corresponding with every possible shade observable in different colored teeth. I want also to especially call attention to page 220-1 (Plate I, 2), in

Simon's Manual of Chemistry, Seventh Edition, published September, 1901, three months after the publication of my article in question. This plate shows the array of the four distinct colors (white, green, black and brown) produced in the passing of ferrous hydroxid into the ferric form. Notice here also the various shades of these colors which are formed by the blending of one color into the other. Does the array of the distinct colors and various shades here presented correspond with the usual tooth discoloration? The real question, then, is: *Will clinical experience prove the correctness of the theory advanced?* With the foregoing suggestions, I leave the answer to the profession.

In making the statement, "It is a known fact to the analytical chemist that ferrous sulphid cannot be precipitated from either the ferrous or ferric solutions by an *acid* reagent as this gas" (H^2S), I have been charged with being "loose or even incorrect," etc. To one familiar with analytical chemistry, it would appear a waste of time trying to substantiate what has long been an established fact in chemistry; but for the benefit of those unfamiliar with this work an exposition of the data which confirms the fact seems necessary. In order to prove my "loose or even incorrect" method of making statements, the authors have wandered far from the point in question, and would make it appear that I stated that ferrous sulphid cannot be precipitated from an *alkaline* solution. The facts are, however, that after making the foregoing statement, to which exception is taken, I went on to prove that the only way ferrous sulphid could be precipitated, in a putrescent pulp chamber, by hydrogen sulphid was that the gas could be acted upon by the ammonium hydroxid present forming *alkaline* ammonium sulphid, and that this reagent will always precipitate ferrous sulphid from the solutions of the salts of iron. It will readily be seen, by the experiment, cited on page 55, that instead of proving my incorrectness, as designed, the authors have (unintentionally, no doubt) verified my "loose or even incorrect" statement, simply by substituting lime water (a solution of calcium hydroxid), where if the same reaction would take place in a putrescent pulp chamber the alkalinity would be produced by the ammonia water (ammonium hydroxid), as stated in my paper, there being no lime water present.

2. Chemistry as Applied to the Bleaching of Discolored Teeth.

Some of the statements made under this head in my paper were found to be "based both on sound theory and on long practice." But

notice has been made that I "assumed" caustic soda to be produced by the use of sodium dioxid for bleaching purposes, which was stated, in my paper, to be a valuable adjunct, as it saponified the fats and allied tissue forming a soluble soap, and this can be easily washed out by using warm water, mechanically bringing with it the insoluble oxidized coloring matter.

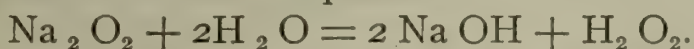
In treating this phase of the subject the criticism reads: "This brings up the question of the composition of tooth pulp and its fibrillar processes. The chief constituents of these are connective tissue, blood, vascular tissue, nerve tissue, proteids, and a small proportion of fats. The pigmentation of discolored tooth proceeds, no doubt, from extravasated blood," etc. In discussing the probable action of sodium dioxid as used in bleaching teeth we find this statement: "But, though the fats and nerve tissue and proteids are profoundly attacked by caustic soda, and all rendered more or less completely soluble, it must be remembered that the connective tissue proper is not soluble in alkalies, and it is precisely this connective tissue which opposes the main obstacle to the mechanical removal of the debris. It is here, no doubt, that the chief use of sodium peroxid lies, as the connective tissue can be degraded and broken up by the powerful oxidants, the alkali aiding the action by swelling the fibers and rendering them more readily permeable." My critics say that I have "assumed" caustic soda to be formed, and in giving what they call the probable action of sodium dioxid, mention was made of the action of the same alkali (Na OH). Then, too, notice how illogical is the whole reasoning. Do they not know that in a putrescent pulp such normal constituents as nerve tissue, proteids and connective tissue have long been broken up into simple compounds by the action of microorganisms? Does not this condition of affairs constitute the state of putrescence? Their reasoning might be accepted as logical, if we were considering the action of sodium dioxid on a normal pulp; but on a pulp disorganized by microorganisms, the case is altogether different.

3. The Chemistry of Bleaching Agents.

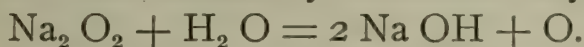
In considering the third and last division of my paper, the authors say that my "handling of the chemistry of those bleaching agents which depend for their action on indirect oxidation is, if not scientifically exact, yet sufficiently correct for practical purposes. But, when he proceeds to discuss the action of direct oxidizers, such as peroxid of sodium and peroxid of hydrogen, he falls into serious

errors, which are easily discoverable by direct observation," etc. Just here I am constrained to say that chemical reagents do not deceive. If the result of a chemical reaction is accepted, it must be correct. Chemists are unacquainted with such language as "while not scientifically exact, yet sufficiently correct for practical purposes."

In my paper I made the statement to the effect that water being a positive and instantaneous decomposer of sodium dioxid, it was impossible to make a solution of this chemical in water, that they act chemically upon each other, and the result of the chemical action depends upon the manner in which the powder is added to the water, or vice versa. If the powder is slowly added to cold water, the action is such as to produce sodium hydroxid, and hydrogen dioxid, as shown in the follow equation:



But, if water is added to the powder, without any precaution being taken, a more violent reaction takes place, the products being in this case sodium hydroxid and oxygen, as:



It seems that my critics are perfectly satisfied with my last equation, as no mention was made of it; but the first one, which is a positive refutation of a previous statement made by one of my critics, appears to be the one in which he is especially interested. On this point the criticism reads: "Leaving, then, all minor points, the main question for discussion is: What is the action of cold water on sodium peroxid? Is it true that water is a positive and instantaneous decomposer of sodium dioxid? To the latter question we answer emphatically—*no*. We state positively that a solution of sodium dioxid in water does exist," etc. I must say before discussing the tests, on the result of which the foregoing statements are based, that it is a difficult undertaking to establish positive facts from negative results. Such by chemists is considered little short of *guesswork*. This is precisely what has been undertaken in this part of the criticism with, what should have been anticipated, an utter failure in every instance—which I shall briefly show.

The authors say "that the experimental evidence upon which we base these statements is of such a positive character as to be easily followed and verified," etc. Let us, then, follow and verify the positive character of this experimental evidence. The only attempt, in the whole experimental work, to verify anything was to prove that hydrogen dioxid was *not* formed when sodium dioxid is slowly added

to cold water. To do this it was necessary to separate the hydrogen dioxid from the caustic soda solution before the tests could be applied, as the latter compound would decompose the reagent used in testing.

Three solutions were prepared:

A. Sodium peroxid in water, approximately 5 per cent.

B. Commercial, thirty vol. solution of hydrogen peroxid, diluted with an equal volume of water.

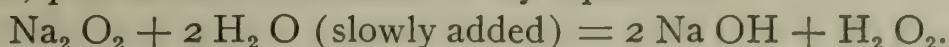
C. A fifteen vol. solution of hydrogen peroxid, similar to B after dilution, but alkalinized with pure caustic soda.

I shall not burden my readers by following the details of these tests; but must say that any one who assumes the position of a critic of an article on chemistry and is not sufficiently conversant with the rudimentary principles of the science to know that hydrogen dioxid, in the presence of caustic soda, is gradually decomposed, without going to the extreme trouble of proving the absence of this compound in such solutions, after two days' standing, as has been done in these tests, is assuming a position which he is incapable of sustaining. Here is recorded the following: "In order, then, to apply this method of proof, an equal volume of each of these solutions was shaken at intervals during two days," etc. The recorded result is that solutions A and C, both containing sodium hydroxid, gave, at the end of two days, no test for hydrogen dioxid; solution B, which contained no sodium hydroxid, responding to the test. It must be remembered here that the alkali (Na OH) will decompose all the hydrogen dioxid in less time than two days. For this reason only is it necessary to make the solution fresh when it is desired to be used; and the fact that Na OH gradually decomposes the H_2O_2 into H_2O and O gives to the solution its greatest value. With this fact in mind, it can readily be seen why the tests, made at the end of two days, failed to confirm H_2O_2 . It can also be seen that, by no means, do these tests prove that no H_2O_2 was formed by the reaction in question.

Please remember that these solutions stood for two days, with repeated shaking, before the tests were applied. Now, let us see what the tests actually prove.

Solution "A," as stated, gave no test for hydrogen dioxid. Does this show that the compound is not formed by slowly adding sodium dioxid to water? Certainly it does not. Had my critics gone one step farther and tested for caustic soda, the presence of this com-

pound would have been confirmed. The presence of caustic soda, then, proves the correctness of my equation.



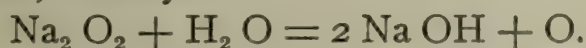
The absence of hydrogen dioxid proves conclusively that, in less than two days' time, the caustic soda will completely decompose hydrogen dioxid into water and oxygen, as was done in this instance.

Solution "B," responding to the test for hydrogen dioxid, has no relation to this work, except that it proves the compound ($\text{H}_2 \text{O}_2$) to be stable for at least two days in the absence of caustic soda.

Solution "C," giving no test for hydrogen dioxid, doubly confirms the statement that caustic soda, in two days' time, will completely decompose the compound ($\text{H}_2 \text{O}_2$).

The author's "positive character" of the "experimental evidence" is based, then, as can plainly be seen, on the utterly worthless test that no $\text{H}_2 \text{O}_2$ was found in the caustic soda solutions after two days' standing, with repeated shaking. And upon the "positive character" of this evidence they conclude: "Thus, plainly, the addition of sodium peroxid to water—the proper precautions being observed—results in a solution pure and simple, for no hydrogen peroxid is formed; and equally plainly, cold water does not 'decompose the peroxid of sodium.' This is proved by A. Solution B is used for the 'control' test. Solution C shows incontrovertibly that the reaction is not only wrongly explained by Dr. Buckley, but that it proceeds in a direction exactly the reverse of that described by him. That is to say, that $\text{Na}_2 \text{O}_2$ is actually *formed* by adding peroxid of hydrogen to a solution of caustic soda," etc.

Now, I have been charged in this criticism with making my researches in works on chemistry "whereas they should have been made in a test tube." If test C shows "that $\text{Na}_2 \text{O}_2$ is actually *formed* by adding peroxid of hydrogen to a solution of caustic soda," why not make a positive test which confirms the presence of sodium dioxid, and the absence of caustic soda, and not jump at the conclusion given simply because no hydrogen dioxid can be detected by the worthless test employed? If cold water will not decompose sodium dioxid, how can the reaction be explained which takes place when cold water is added to the chemical in a test tube, or a cavity of a tooth, namely:



If water will not decompose sodium dioxid, why is it necessary to keep the chemical from being exposed to moist air? In the light

of these facts, will my critics, when asked the question, Does water decompose sodium dioxid? answer "emphatically—no?"

I have now proven, beyond the possibility of doubt, the correctness of every statement to which objection has been made, and by so doing have necessarily shown that the exposition of the science of chemistry by my critics exposes either their unfamiliarity with the handling of test tubes, or else their complete inability to recognize a chemical test when found.

In closing this discussion, let me say that just criticism is always welcome. If I am wrong, no one could be more anxious to be corrected. We live to learn. In trying to solve the problem of the discoloration of teeth from putrescent pulps, we are confronted by many difficulties, and more good can be accomplished along this line, for the profession, if those interested in the work will labor together to find only the facts, instead of exhibiting such a spirit of contention as have my critics.

METHOD IN THE USE OF REMOVABLE MATRIX FOR CONTOUR GOLD FILLINGS.

BY FRANK E. CHEESEMAN, D. D. S., CHICAGO, ILL.

The method I use may or may not have been previously advanced. If it has I have never heard or read of it.

I believe the general custom is to fit a matrix of some special make "according to the fancy of the individual operator" to the tooth and cavity margins before starting the filling and leaving it there until filling is completed, having the matrix fit closely as possible to the margins and treating it as a simple crown cavity.

I am not prepared to state that this method will not yield a perfect result in the great majority of cases, especially when practiced by skillful operators, but it seems to me in view of the fact that the vital point of a filling, namely, the gingival margin, is very quickly removed from vision that there must be great uncertainty in the mind of the operator as to whether his filling is to be a success or not, as it must require a great deal of time, patience and ingenuity to fit a matrix so one can be certain that the margins shall be perfectly covered and the gold thoroughly condensed against them.

For the purpose of illustrating the method I have been using, suppose we cite a disto-occlusal cavity in lower second bicuspid.

After having obtained what separation I need, which is very little, I adjust the rubber dam, covering the first molar and at least the two bicuspid. I fill in the undercut I have made for retention and cover the cervical wall thoroughly, extending the gold up to and over the lingual and buccal walls for a short distance, leaving the center of the cavity somewhat lower than the sides, and finishing the condensation of the gold with the foot plugger. Before adjusting the matrix, with a disk I thoroughly remove all overhanging gold from cervical margin only, and polish. Great care must be taken that the rubber is not injured in doing this. Of course when the cervical wall extends below the gum margin it is difficult to do this without injuring the rubber, and the removal of overhanging gold and polishing must be left until after filling is completed. But in most cases it can be done at this point and always should be done when possible.

I then adjust my matrix, which is always made for each operation from a piece of 00 flexible separating file, cut so that it extends very nearly up to the occlusal surface and just below the cervical wall and is about the width of the teeth. I now wedge it against the adjacent tooth, the first molar in this instance, with a couple of pellets of gold extending along the cervical wall, malleting the gold against it which will hold it securely to place. I now build up center of cavity which was left a little lower than the sides until I reach the level of the point where I have previously built the gold against side walls. I then remove the matrix and build up to and over the side walls as far as I deem it feasible and again insert the matrix and build up the center again, continuing this procedure until I am nearly to the occlusal surface. I now discard the matrix I have been using and trim up a piece of pure gold backing, 36 gauge, inserting it in the space left by my first matrix, having this one long enough so that I can burnish it partly over surface of adjacent tooth. I now thoroughly condense the gold in cavity against this matrix before introducing more gold, this matrix being so very thin allows me to pack gold so much closer to adjacent tooth that I invariably have some trouble in getting a strip or disk between the tooth and filling when operation is completed, and I am always sure if my work has been carefully done that all the walls are perfectly covered and that the gold has been as thoroughly condensed against them as if I had been filling a simple

cavity. There can be no uncertainty as regards this as I have been able to see margins at every stage of the operation.

I do not try to fit matrix to the margins of the cavity. As a matter of fact I avoid it, as I believe it is not only unnecessary, but that the certainty of making a perfect filling, is jeopardized by that procedure. I have used this method for a number of years and for my purpose it is the simplest and best I have seen. Contour fillings have no terrors for me and take but little more time and energy than a simple cavity of the same size. If this custom were used I do not believe our patients would complain of having food wedging between the teeth, which is a point that some dentists overlook when inserting and polishing contour fillings.

It is such a simple method and so easily understood that I think a trial of it will convince any dentist of the desirability of discarding ready made matrices. By this means the margins of the cavity are perfectly covered and the gingival portion of the filling is readily dressed to form and polished.

ELEMENTS OF SUCCESS.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

To select such a title for the subject of my address on this occasion would seem a hazardous procedure for two reasons: One, that it has so often been written upon that it is almost hackneyed in our literature, and the other, that it may be considered doubtful whether, after all, success can ever be taught by word of mouth. And yet my interest in the young men who are year by year entering the ranks of the dental profession is so great that I am irresistibly driven to attempt a few words of suggestion, which I hope may at least be helpful.

We may confidently start out with the assumption that every man desires success. Each one of you has this ambition, whether you have any other or not. But there may be a difference of opinion among you as to what is success, and it would seem well to discuss for a moment the quality of attainment which measures up most certainly in the sum total of true success. Probably, if a correct analysis were made of the mind of every recent graduate, it would be found that deep down in his heart the desire for wealth

*Address delivered to the graduating class of the Department of Dentistry, Vanderbilt University, Nashville, Tenn., May, 1902.

constituted the chief factor in his idea of success. And having said this much, it should be immediately in order—following established custom—for me to launch out into a serious dissertation against the allurements of wealth, and the utter folly of making its attainment an object of life. I should harangue about the debasing influence which the mere accumulation of money seems to have upon the individual, and should warn you against this besetting sin of our present civilization. But I purpose doing nothing of the kind—and for a double reason. One, that enough has already been said to young men in the attempt to belittle the virtue of wealth, and the other that I do not find myself in total agreement with the point of view assumed by the majority of those who have written upon this question.

I would not have you think that I place the accumulation of money above that of other factors in the attainment of success, nor that I consider it even one of the chief elements in man's material advancement, and yet, in my observation of the career of men, and particularly those of our own profession, I cannot quite bring myself to decry the value of money to the extent of many who have sought by advice to direct the destinies of the coming generations. Much as I should lament the evil effects of a blind worship of the monstrous God of Mammon, much as I realize the dwarfing, warping influence which enshrouds the man who is dominated solely by a love of money, I have almost come to think that there is one thing even worse than this, and that is the helpless, pitiable poverty of old age. There is no more pathetic sight to me than the old man or old woman, bowed down by the snows of many a winter, clinging helplessly to the barren rocks of the nether hillside of life, unable to creep up or let go, and stung to the marrow at every breath by the bitter, biting, blast of penury and want.

Whatever may have been the previous record of such an one, his life cannot in the fullest sense be called a success, when the latter days are clouded by suffering, dependence and despair. It is well that men think of this while they are yet young and have the energy and capability to provide for better things. It has so chanced that I have been thrown in contact with members of our own profession who are striking examples of what I have just said, and the lesson has impressed me as has nothing else in all my professional experience. I have known men—not one, but too many—whose declining years have been darkened by a dependence which was as unnecessary as it was to them galling and heartrending. A man

who has had good health and who has suffered no more than the ordinary misfortunes of life cannot be termed successful who has, in the end, to accept charity for his very existence. It matters not that this charity comes with good grace by those who dispense it, that it is to them a loving service cheerfully and delicately tendered, and that they are made bigger-hearted and happier by reason of it. The chief affliction falls on him who is obliged to accept it, and whose humiliation is often like i on entering the soul.

It is a manifest duty for every man to make provision for his old age, and not only that, but to provide for those who are by reason of nature or environment dependent upon him. He should never allow money to become his master, but should aim to be master of at least sufficient money to supply his wants.

And so, after all, when the assumption is made that recent graduates are inclined to have an eye to the main chance, I am not one of those to wholly discourage it. I ask only that the money shall be obtained by honorable methods, and put to legitimate uses.

But, as has been intimated, money is not by any means the sole index of success. A man may have money and yet not be successful; he may accumulate wealth and yet fall far short of happiness. To be successful in the broadest sense of the term is to do the greatest amount of good in the world, and he who has the largest capacity for doing good has the greatest element of success. Fame is not success, reputation is not success; neither is power, influence, nor social preferment. Each of these may be legitimate and useful in its way, but all of them put together cannot make a man truly successful unless he grasps a wider significance of his relationship to the world and employs his energies to the specific betterment of his fellowmen. This one thing constitutes success more surely than anything else—to alleviate human suffering and add to the sum of human happiness.

If you start out with the determination to do the greatest good, and follow this idea steadfastly in your daily work, you have at least taken the first steps on the road which most surely leads to ultimate success. A man cannot continually do good to others without doing a corresponding good to himself. There is no law of mathematics more stable or invariable than this law of morals, and I wish it might be my good fortune to impress that fact upon every one of you here this evening. It seems difficult for the average individual to learn this one lesson, and yet its application to the affairs of every-

day life would do more for the success and happiness of the human family than any other one system of morality that has ever been preached.

And if it be true that to do good is the surest index to success, then I say that every man has an opportunity to attain success. It is not one of those things which may be termed restrictive in any sense. There is always the opportunity for doing good. It is a matter in which competition never hampers, in which the supply never runs out. To the one who turns resolutely for the first time to this humanitarian point of view, however poor he may be in other things, the sensation is something akin to that of the woman of whom I heard the other day. This poor soul had never known what affluence was; she was continually pinched by poverty, and hampered by the necessity of perpetual deprivation. It seemed to her that she had never known the time when there was enough of anything. But one day, by some strange chance, she found herself for the first time down by the sea-shore, and as she stood looking with wondering eyes upon that immense and apparently limitless expanse of ocean, she sighed and said: "Thank goodness, here is something that there seems to be plenty of." And so it is with the man who seeks to do good. The opportunities are as limitless as the widest ocean, and the more one does, the more the horizon broadens.

You, as young men just entering upon a professional career, have the rarest opportunity of following out this particular line of action, and of applying its principles to the conduct of your affairs. There is not in professional life the temptation toward sordid and unworthy methods which we too frequently find obtaining in the conduct of trade. Commercialism developed to the degree it is to-day seems to call for a line of sharp practice in competition, which has no place in a profession. It is true that we find men in the practice of dentistry, or medicine, or law, who stoop to base means to obtain an advantage over their fellows, but the fact that this—by common consent—is out of place is shown by the ready criticism which such a procedure calls down upon the one who practices it. In trade everything seems to be fair, in a profession nothing is fair that is not philanthropic and unselfish. To win in a profession by foul means—if such a thing were possible—would be to bring down upon the individual the ostracism of his kind, and even the distrust of the public in general. Time was when, in the mind of the people, there was little distinction, from an ethical point of view, between the professional man and the tradesman, but that time has passed. Little by little

we are educating the public to a just appreciation of the peculiar duties devolving upon a professional man aside from those of mere citizenship. He comes into closer personal relations with his patrons than does the man who sells goods over a counter or who sits in his office and directs the affairs of his business at long range. This close relationship between the professional man and those he serves adds immeasurably to his responsibilities, and no young man starting out in practice should fail to realize this to its fullest extent. It also does another thing. It increases his capacity for doing good, and adds to the opportunities for a strong character-building in his own case more surely than does the pursuit of a purely commercial calling. In this respect, then, does professional life offer the readiest means of securing happiness of the truest type, and happiness of the truest type is merely the counterpart of the surest kind of success.

I never was more impressed with this view of the advantages of professional life than by hearing an address recently delivered by an eminent business man to a class of medical students. This man has the reputation of being one of the most successful men in the country. He is an active member of a firm known from one end of the land to the other as among the most prominent in its line, and is naturally looked up to and envied for his success. And yet this man, standing and facing a class of students, with all the years of experience which a notable business success had brought, frankly admitted that his life had been to some sense a disappointment to him. Said he: "It was my ambition as a boy to eventually study medicine, but the force of circumstances drove me into other channels, and for a time my energies were so absorbed by the activities of the occupation I was following that I fondly hoped I had outlived my first love. But now, as I study my relationship with the world, and compare it with what it might have been had I studied a profession, I am forced to acknowledge, in the light of mature consideration, that my life is not what I should have willed it nor what I could easily have made it in a professional pursuit. I am truly sincere when I say that I envy you young men your advantages, and that I would gladly exchange places with any one of you."

Even in view of the frequent tendency among men to bewail their lot and regret their selection of a particular calling, here is a statement that cannot be lightly passed over. It is too plainly evident that this man recognized in his wide experience that there was something connected with professional life which could never be reached in

commercial life, no matter how successful it might be. And it is this something which I beg of you to learn to make the most of, for through its influence you are more certain of a satisfactory fruition of your professional endeavors than through any other single agency which I am able to point out.

But it may be well for us to consider the more practical phase of the question of success as it relates to the conduct of a dental practice. In approaching this part of the subject I must confess to some hesitation. It cannot be expected that I should be able to say anything that you have not already heard from your instructors in the college course, and yet it may chance that I can add something that shall make more impressive the lessons they have taught.

One of the chief requisites to success in conducting a dental practice, and gathering around you an appreciative clientele, is skill in your profession. This is not merely the stereotyped expression of a trite aphorism, it is the specific statement of an actual demand of the day. There never was a time in the history of dentistry when the premium on pure skill was so high as it is at the present time, nor when the lack of skill was such a handicap. People are more discriminating in these things than ever before. The dentistry of a decade ago will not pass muster in the minds of the public to-day. The rapid advance in the profession has carried its impulse on into the intelligence of the people, and unless you and I are capable of demonstrating a marked ability before the people, they will have none of us. This is particularly true of the young man starting out in practice. He must have something better to offer than the old established practitioner, else the people will not patronize him. Why should they? It would be a cold community indeed, who would ruthlessly turn from a man who had served them for years, and go to a new man, unless for some legitimate reason. And this would seem a discouraging thought for a young man, were it not for one thing—a thing that I must venture to give expression to to-night, at the risk of making every one of you egotistical, or of appearing to disparage the older practitioner, neither one of which intentions I trust you will lay at my door.

I have a firm conviction, based on the closest observation, that the young man going out to practice to-day, with the advanced knowledge which a well-rounded-out college course affords him, is better equipped to perform skillful operations along many of the lines of modern dental practice than is the average practitioner of several

years' standing. In saying this, I have only in mind those young men who have so applied themselves as to get the most out of their college experience, and I have not in mind the practitioner who, by the most diligent research and application, has kept himself fully abreast of the times. I am simply led to this statement by the observation of a man who recently spent half a day inspecting the practical work of a class of students, an unbiased man, not connected in any way with college work, but a close observer of the signs of the times. Said he: "I am profoundly impressed with what these young men are doing. The work is away above that which I see in the mouths of patients from old-established practitioners, and I have only to say that, unless the older practitioners work a revolution in their methods, the younger men are going to rapidly drive them from the field."

I am not quite so pessimistic regarding the future of the old practitioner as this, and I still think that years of experience count for much as against the necessarily limited judgment of the recent graduate, but we cannot escape the fact that these bright young men going out year after year have the advantage over the older men, that they are drilled in the very latest advances of dentistry, and are to that extent better equipped. That this equipment is readily recognized by the public is evident from the fact that so many of our young men take a commanding position in the profession almost at the outset. It is simply a demonstration of skill on their part which wins the day for them. But woe betide the young man who goes out lacking in skill. If he has frittered away his opportunities while in college, he may be certain that his sins will find him out, and the last condition of that young man will be worse than the first unless he speedily makes good his delinquency.

In thus urging the necessity of skill before a body of recent graduates, I may be charged with the proverbial carrying of coals to Newcastle. It must be taken for granted that to have successfully passed the examinations requisite to obtain a diploma is of itself an evidence of skill, and yet, in my observations of young men, I have seldom found that it was not possible to greatly increase their skill—at least, in some particular department of the work. It should be the aim of every young man to study his own peculiar weaknesses in practice, and when a weakness is discovered he should at once apply himself to overcome it. In this way, he will early become a well-rounded-out and skillful practitioner, and will so impress his

patients with his attainments that success in practice is easy of accomplishment.

But skill is not the only requisite to success. There is one fundamental requirement that I must not pass over lightly, even though I shall be obliged to do so briefly. In every walk of life, but particularly in the practice of a profession, the chief essential to a lasting success is integrity of purpose. Absolute honesty of conviction and application will prove a more tangible asset for the young man to bank upon than is generally accredited to it. And this seems so hard for the average man to understand. We see examples every day in which, so far as surface indications are calculated to prove anything, it is the tricky man who gets ahead. But trickiness never carried a man into a position of permanent preferment. There is an irrevocable moral law behind all voluntary procedure, and while a man may seem to gain a temporary advantage by questionable methods, the time invariably comes when he is known at his true worth and judged by his just deserts. But even if he succeeded in always deceiving his fellows, if he were so marvelously skillful in trickery as to continually wear a cloak which hid his true purpose from the world, there is still a stronger reason and a better argument why a life of moral rectitude is the only safe one to lead. No man can practice trickery or deceit without experiencing in his own individual organization a corresponding disintegration of character which, in the end, becomes absolutely disastrous. However powerful or successful a man may appear before the world, if his own character is constantly undergoing dissolution through the corroding influence of a false purpose, that man's position is fraught with peril, and sooner or later his house built on sand will tumble about his ears and bury him beneath the debris of his own pernicious designs. No fact in philosophy is truer than this, no law in nature more infallible.

And as professional men you are doubly bounden, not only on the basis of self-interest, but on the broader and better plane of honor and manhood, to observe rigidly the golden rule in the conduct of your practice. Patients come to you confidingly. They place themselves in your hands, because you have a certain kind of knowledge of which they are ignorant. If you deceive them in the slightest degree as to the character of service you render them, you not only jeopardize your own interests, but you sin grievously against the body politic. To my mind, there is no more despicable rascal alive than the professional man who takes advantage of his superior

knowledge to work an injustice upon a confiding patient. Be honor bright in all your professional relations, and even if you do not thereby win material success, you will at least win the right to hold high your head, and the self-respect thus attained will be far more precious than a mere financial consideration.

There is one other quality to which I wish to call attention. I have seen young men start out in practice with brilliant promise, who afterward fell sadly by the wayside; and I have seen other young men who promised little, but who attained much, and I have sometimes marveled at these results. I have seen native ability fail, and apparent mediocrity rise to distinction, and in casting about for a reason I have found only one explanation which fits most of the cases that have come under my observation. In the one instance, the man has ability, but lacks application; in the other, his ability is not pronounced, but he has the patience to plod. I must lay down, then, as one of the chief requisites to success, that magnificent quality which moves the world in all the varied activities that crowd us in an ever active age, that force against which sea, and land, and earth, and air, and all of nature's obstacles erect their barriers in vain, that splendid attribute of human nature known by the name of industry. However brilliant a man may be, he cannot succeed without being industrious, however lacking he is in native qualifications he can at least accomplish something by "keeping everlastingly at it."

I make a plea, then, to you young men to-night that, as you start out into your various fields of labor, you carry with you an honest determination to cultivate in your daily work the quality of industry. This is equivalent to saying that I believe industry can be cultivated, and I wish to go on record as a firm believer in that doctrine. You can develop industry till it becomes a habit, and it is one of the most profitable and most delightful habits that a young man can form.

It merely remains now for me to offer you my congratulations, and bid you thrice welcome to our professional ranks. I congratulate you on the selection of dentistry as a medium through which to devote your energies to the betterment of the human race. I congratulate you upon the auspices under which you are permitted to enter the profession, the institution which has fostered you during your student days, and which now sets its seal of approval upon you. I congratulate you upon the character of your instructors—they who have labored with you so long and so faithfully, and who stand sponsors before the world, attesting to your professional attainments.

In bidding you welcome to our ranks, I extend to you my own personal good wishes and my most fraternal regards. May your life, professional, social, and domestic, be all that ever comes to man in the attainment of happiness, and harmony, and content. Above all things else, may you be of benefit to your fellowman.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Schiller Building, November 5, 1901, with the president, Dr. A. B. Clark, in the chair.

Dr. Hugo Franz read a paper entitled "The College Bred Dentist and His Duty in Guarding the Name of the Profession."

DISCUSSION.

DR. C. N. JOHNSON: Mr. President and Gentlemen: The essayist of the evening is peculiarly fitted by reason of his past experience to discuss the subject he has brought before us this evening. Having been born in a foreign country and become familiar with the systems of dental education and the legal regulations abroad, and then having come to the United States and studied the methods in vogue here, he is eminently qualified to take a broad view of the subject and point out to us some of our defects.

The questions raised in the paper to-night are at the present time most opportune, not only in their bearing on our professional status at home, but on our reputation in foreign countries. It must be patent to the mind of every American dentist who reads the signs of the times that if the reputation of American dentistry is to be safeguarded and our own status respected by foreign diplomats, we must unitedly move to a higher plane of responsibility than we have assumed in the past. Just how we may successfully assert ourselves is the problem engaging our attention on the present occasion, and I bespeak for the essayist a most careful consideration of the ideas he has presented. It is a broad-minded patriotic utterance which should be read by every dentist in the United States.

A study of the development of American dentistry will reveal the fact that its advancement along professional lines has been without precedent in the history of the world. This is not a mere empty-sounding phrase but an established and sober fact. In this development there is much to be thankful for, and much upon which we

may properly be congratulated. But may it not be true that by devoting our energies so assiduously in this one direction we have too long overlooked our legal status in the eyes of the world, and have allowed reproach to be justly centered upon us? It is this which has led to our present anomalous position abroad whereby our professional attainments are most generously acknowledged, while our degrees are almost wholly discredited.

It may be said that we have ourselves to blame for the measure of disgrace under which we are suffering to-day, and yet the road to just legislation in this matter is not all the way down hill nor do the roses grow by the roadside. It is far from treason to say that our American legislatures are not always actuated by the highest moral principles, nor do they invariably constitute themselves calmly deliberative bodies studying only the ultimate good of the commonwealth. It may probably be admitted that they are not at all times well informed as to the necessities of the case so far as an adequate protection of the public is concerned by proper professional legislation, and yet we cannot resist the question as to how willing a listener the average legislator proves himself to be when approached with unprejudiced information from reliable sources upon a subject of this character.

It is so difficult to convince him that there are no ulterior motives behind any movement of this kind on the part of dentists, and when we say to him that we are asking legislation for the protection of the people and the reputation of the State rather than for our own aggrandizement, we find the argument entirely foreign to his particular kind of philosophy.

Then again even with the most honest legislators there is at this particular time a chariness about advancing any movement which smacks in the least degree of class legislation, or rather that which may be twisted by the glib-tongued orator or the professional politician into a seeming semblance of class legislation.

It is almost a notorious fact that with the best bill that can be introduced into the legislature by the united efforts of the most representative men we have, and endorsed unanimously by the reputable element of the profession, it is only necessary for one or two individuals with a certain kind of influence to knock it out completely in committee before it is ever brought to a vote.

With these conditions confronting us it is evident that the way to just legislation is not clear sailing. And yet I have faith that if

the profession will go unitedly at work at this time when the recent scandals in diploma traffic are before the minds of the people, we can create such a sentiment in favor of reform that no legislature can afford to ignore our demands.

Here is the crucial issue then—to secure unanimity of action on the part of the profession, and this of itself is no small thing to accomplish. In fact the history of the profession in the past would go to show that it is an exceedingly difficult matter to bring dentists together in united action for the furtherance of any project, however laudable. We are not sufficiently broad-minded to overcome petty personal predilections when it comes to the settlement of any great problem. We are too apt to think of self rather than of the body politic, and are far more willing to work for our own individual good than for the good of the majority.

This is not said in an altogether critical spirit. There is some reason for it, and that reason is traceable in its ultimate analysis to the nature of our calling. The practice of dentistry does not tend to breadth of vision, but rather to individual action and individual responsibility. There are few callings in which the individual so completely dominates his affairs irrespective of the outside world as in the practice of our own profession. A dentist early falls into the habit of conducting affairs from his own personal point of view. For him to take part in a mass movement of any magnitude is to find himself out of his natural element, and he cannot readily harmonize his ideas with the ideas of the multitude. Organized effort, then, among dentists has this handicap, and it is this which invariably leads to the troop of seemingly petty objectors who invariably spring up and interpose personal obstacles whenever any great movement is launched in the profession.

It is high time for us to rouse ourselves out of this species of narrowness and look to the broad and philosophical principle of the greatest good to the greatest number. If we unitedly move forward to the attainment of just legislation, and if we advocate our cause, as the essayist has said, in the proper spirit of earnestness and enthusiasm we shall so impress public opinion as to finally succeed in placing upon our statute books such laws as shall adequately protect the people and vindicate our professional honor.

DR. W. A. STEVENS: I did not expect to be called upon to discuss this paper, and I have very little to say. There are some things in the legislative bodies of this country of which the essayist is not

aware. There have been from time to time probably fifteen or twenty bills presented before the Legislature of Illinois in regard to the practice of dentistry. A large number of members of the dental profession are in favor of a higher standard of dental education, and those men have labored industriously for the advancement of the dental profession for years; yet, at the same time, we have an anomaly in the Legislature of this State. The essayist, himself, does not consider the fact that each State in the United States governs itself in a measure, and that we can have in this country laws in relation to the dental profession that are different in the various States. At one time, in the medical profession, there was a large penalty imposed upon any man who performed an operation; and it was proven malpractice; at the same time they did not provide medical students with material for purposes of dissection. Some twenty years ago there was a grave robbery out in the country, which happened during the session of the Legislature, and Dr. H. A. Johnson (deceased), if I remember correctly, drafted a bill and took it to Springfield, and had it presented and adopted by the Legislature. This bill provided for the disposal of the bodies of paupers and unclaimed dead to medical colleges for the benefit of medical students and the medical profession, and also in later days for the benefit of the dental profession, since dental colleges have been established.

The medical profession had for years a bill before the Legislature providing for material upon which to operate or to dissect in order to teach students. I have no doubt that the older physicians could tell us how they had robbed graves themselves in those days when it was so hard to get material for students to dissect. I recall one man who did nothing but furnish material for the Chicago Medical College, which is now called, I believe, the Northwestern University Medical School. I know that he, at one time, drove out of Graceland Cemetery with a body sitting in his carriage by his side that had only been buried that day. There was no other way to get material for purposes of dissection until the passage of the bill introduced by Dr. Johnson.

So far as the dental profession is concerned, if we want to secure proper dental legislation, we must select different representatives. About eight or ten years ago there was a dental bill before the Legislature for consideration, and I wrote to one of our State Senators asking him to do what he could for the promotion of that bill. He said that he would do all he could. In my letter I stated that the bill

was for the benefit of the public, and not for dentists. He wrote back, saying that I would not recognize the bill with its amendments, but added, "In the name of God, what kind of legislators do you send from Chicago?" I wrote it made no difference, whether they were Republicans or Democrats, they are all in the same boat.

DR. W. C. BARRETT, of Buffalo, N. Y.: I esteem it a great privilege to have been present to-night and to have listened to this excellent paper. It is a subject upon which at times I feel that I have almost talked myself out, and yet it is one which lies near my heart, is ever new, and always presenting fresh phases. I think the dental profession is doing pretty well, on the whole. But there are very few who have comprehended just what is the organization that we call the dental profession. I apprehend, sir, that there are but three great professions really entitled to the name profession, namely, law, medicine and divinity. Any other avocation must derive its right to be called a profession through one of these. Now, we are certainly not a part of divinity nor of law, that I know of, but we do have something to do with medicine. From it we derive our right and are entitled to be considered a profession. But medicine, sir, has nothing in common with anything that is mechanical or prosthetic. It is entirely mental. The essential portion of dentistry is mechanical. And so, while we talk about the antiquity of dentistry, and how far it extends back into the dark and benighted past, we must recollect that whatever dental practice there may have been previous to the year 1839 was either completely unorganized and disorganized, a kind of peripatetic experimental mechanics, or else it was the practice of dentistry as a specialty in medicine. When, in 1839, Chapin A. Harris and his compeers endeavored to harmonize the inharmonious and discordant elements that then comprised that which was called dental practice, and made application to medicine for the purpose of incorporating into it a dental system and the teaching of dentistry in a medical school, medicine declined because it had nothing in common with the dentistry of that day, which was almost exclusively mechanical. It could take cognizance of nothing that was mechanical, and hence the dentists of those days were thrown upon their own resources and obliged to establish separate, segregated, independent schools. And here I beg you to note the great distinction between American dentistry and the American system of organizing dentistry, and that of all the rest of the world. In the dental curriculum, which is pursued in our schools, is included

everything which may be practiced as dentistry—mechanical, prosthetic, medical, surgical, and everything alike is taught in the dental schools. In Europe the dental profession, twenty-five years afterward, was organized on different lines. It was conceived that dentistry was strictly a branch of medicine and must be taught in medical schools; but as medical schools took no cognizance of anything mechanical, that which was really an essential part of dentistry and connected indissolubly with dentistry, the mechanical portion, must be ignored by the schools and taught outside. And so a system of apprenticeship was established in Europe, and to-day dentistry, is a part of medicine, is under its jurisdiction, and in all of the foreign countries in which they have examining and licensing boards they are medical boards and the license is a medical license to practice the medical part of dentistry. They examine in what? In all branches pertaining to and that are within the curriculum of medicine, and not outside of it. I will except Germany in some special peculiarities. It is so in England or France. All of the dentistry that is taught in the schools there, which is really obligatory, is the medical portion exclusively, and the examinations are medical, and do not include any mechanical, prosthetic, or other work of that kind. Hence, you see, it divides itself into two great departments; the mechanical and operative portion, which we consider highly essential, is absolutely ignored by medicine, and the practitioners of the practical are at a great disadvantage. They are not dentists, but are artisans in dental mechanics. In America it is just the opposite.

As to the methods of organization of the profession, which has produced the greatest, the best, the most practical men and useful dentists? In which country does conservative dentistry stand the highest? If, when Chapin A. Harris and his compeers made their application to a medical college to have dentistry incorporated into the medical curriculum, it had been accepted, then there would have been no separate degree. But dentistry would be organized and practiced as ophthalmology is to-day. Ophthalmology is practiced under the medical degree, under a medical license, and it includes the medical and surgical portion alone. The fitting of artificial appliances belongs to the optician. He is the mechanic. There is a mechanical side to ophthalmology, though not to the extent of that of dentistry, and while the ophthalmologist practices optical medicine and surgery, the other work, the mechanical work, belongs exclusively to the optician. Had dentistry been organized in that way in

America, we would have the same kind of dentistry they have in Europe. We may well, from our standpoint, thank God for the rebuff which Chapin A. Harris and his compeers received for it made American dentistry what it is to-day. It has made the curriculum of the dental schools such that it includes everything that is practiced as a portion of dentistry, and it has made American operators, as conservative operators, the best in the world. We may have our weaknesses and points of inferiority, but no intelligent man disputes our preëminence in the art of filling and preserving the natural teeth.

I have nothing to say particularly about the medical branches, nor do I make any vauntings in that field. But we have been gradually developing. We have made wonderful strides within the past few years. Gentlemen, I appeal to you, what was dentistry twenty-five or thirty years ago as compared with what it is to-day? At that time it was the exception for men to take the degree, and a man was rather at a discount for possessing it. Now, there are no dentists who do not go through the curriculum of the dental school to which they belong. Dentistry has never made more rapid progress than it is making at this time. I repeat that we are doing pretty well. We are in a transitory condition, but we are making rapid progress, and I thank God that the young men of the profession of to-day are carrying the banner to greater heights than we who were of yesterday were able to carry it, and I believe in the near future, as we organize better and better, more and more carefully, and more and more perfectly, we shall finally reach the altitude of an independent medically allied profession, which shall be divided into specialties as medicine is divided into specialties to-day, and whose practitioners will look back to the close of the nineteenth century and point with great pride to the grand work that was then accomplished.

DR. G. V. BLACK: The subject of the paper is a very important one at this particular time, and it has been very well treated by the essayist. It is the younger men that we must look to, the men who have passed through a collegiate training, and have prepared themselves for the practice of dentistry to carry forward the work in the future. But there is something for us all to do at the present time, with reference to the standing of dentistry before the law. The necessity of to-day is that we work as one man, that we work together, that we lay aside our differences that have baffled us in the past when going before the Legislature, and that we work together to one common end, to learn what we want, and do this one thing. That

is a necessity. There is also a necessity that we organize for that work, and in a peculiar way that is fitted to do the work. I am not going to discuss a plan particularly this evening. I know the organization that is being formed in the medical profession. I know it very well. I know it will succeed, and I am sure that such an organization could be effected in the dental profession, if it is properly approached. How many ethical men have we in the dental profession to-day? We may safely say that there are two-thirds of those who are practicing, a very large majority. Many of these are not members of dental societies, perhaps, and do not attend our meetings. There is a large number who are members of dental societies in the city of Chicago and in the State of Illinois. There are more than as many more practitioners who are ethical men, and who would be glad to work with ethical men, if properly approached, and it is only the minority, and a comparatively small minority, that would prefer to act to thwart the will of the better elements of the profession. It is only a matter of proper organization to obtain such a bill as the dental profession may want. If we are chaotic in our laws in the State of Illinois, it is because we are chaotic in our thought one with another in regard to laws. What we want and what we must have to succeed is unanimity among ourselves. If we have that and will work, we can have what we need. There is no question about that. The legislators at Springfield want to perform the will of the people, if they know it. That is what they are there for. There are certain men, perhaps, who want to do this thing and that thing for private reasons. There is no doubt about that. But if their clientele want a certain thing done, you will find these men ready to do it. The question is for them to know what is wanted, and they cannot know when this man says one thing, and that man says another, and the information that goes to them is chaos. Let the information be solid and reliable, and we will get what we want, and not till then.

DR. J. N. CROUSE: The dental law of the State of Illinois is much better than some of the men who have been supposed to enforce it. In the past some members of the Illinois State Board of Dental Examiners have violated the law, and have not lived up to it in many particulars. They seem to have adopted rules to suit themselves rather than to have carried out the law, and this is what has brought the State of Illinois into disgrace. Unfortunately, the statute of limitations prevents us from going back so far as we should like and

overhauling the whole outfit, but before we are through we will set some examples that will serve as an object lesson for all concerned. At the present time we have a good board, and it is hoped and expected that it will enforce the law strictly.

DR. TRUMAN W. BROPHY: I want to make a statement in regard to the qualifications of American dentists and of other dentists who are barred from practicing in foreign countries. It would appear from the statements which have been made that the American dentist is the only one who is singled out as being barred from practicing his profession on the other side of the water. That is not a fact. In England, or on the British Isles, it is impossible for any physician or dentist from a foreign country, or country outside of the British Isles, to engage in practice without passing an examination provided by the general medical council. While the American dentist is barred in France from practicing, other foreigners are likewise barred. Men coming from countries outside of France are barred. Any physician in France may engage in the practice of dentistry; that is, any physician who qualifies in the practice of medicine in France is allowed to practice dentistry there legally. I believe that condition of affairs also prevails in Germany; in Spain, Italy, Switzerland, and in Austria physicians are qualified under the law to practice dentistry and may do so if they desire without knowing anything about dental manipulation. As Dr. Barrett has said, which method of teaching, the one here employed or the one abroad, would appeal to us as the most rational, and the one best adapted to prepare us for our lifework. That condition of things will probably be changed by and by, as the people awaken to a full realization of what the dentist should be in those countries. The people will demand that the dentists who care for them must have certain qualifications, must have been prepared to perform the duties they assume. So I trust, and we look forward with hope to the meeting of the International Dental Federation in Stockholm, next summer, when there will be a movement made which will lead up to a better understanding and a better state of affairs throughout the world so far as dentistry is concerned. Dentistry on the other side is newer than it is with us, and we are scarcely half a century old as an organized profession. So over there they are thinking on this subject, as to how men shall be prepared to engage in the practice of dentistry, and the awakening that will take place and the changes in the curric-

ulum of the schools there, will bring about results that we will all be glad to see accomplished.

DR. FRANZ (closing the discussion): It would take too much time to speak on the several points that have been brought out in the discussion, and set them right, and probably I will have an opportunity some time in the future to discuss those points in a paper, so that we may have a clearer understanding of them.

Dr. Stevens referred to the peculiar condition of legislation in the different States, saying that each State legislated for itself. I was very well aware of that, but I have to say that it will always remain a drawback as far as the American dentist is concerned, or as far as representation by the American dentist in foreign countries is concerned, which is based on a university or collegiate education. A collegiate education ought to be a standard all over the United States. That is the ideal we should try to reach. Of course, I realize very well that in our present state there is little hope of getting there in the near future, but further representation would be well. Personally, I do not see any good reason why there should be a different standard in the State of Illinois from that in the State of New York or Nebraska. If we look at the subject from a broader point of view, from the standpoint of scientific education, we ought to have the same standards all over the world. That is what we should strive to get at.

Dr. Brophy stated that none of the graduates of foreign countries are recognized in England; that they have to pass another examination. That is true. But I wish to make a statement so far as Germany is concerned. Any one of you, no matter whether you have a degree or State Board certificate, can go over there and practice dentistry. Nobody will prevent you from doing it; but you cannot practice dentistry as a dentist over there, or what we call a dentist. The title of *zahnarzt* is sanctioned by the government, and the government exacts certain requirements from those who want to take the examination. They must have gone through a college or university course; they must have attended nearly all of the lectures which pertain to the practice of dentistry and that are given in the better dental colleges. As to scientific lectures, the students must go through the same departments that medical men do, the anatomical, the pharmacological, and physiological departments; and then there are separate institutions where the mechanical part of

dentistry is taught. The teachers of dentistry are connected with the university.

The matter of apprenticeship is dying out rapidly. I think there are very few who are serving apprenticeships now, and studying at universities at the same time. Those men who have gone through a regular course have been connected with the university for three years. They are entitled to go before the State Board and take an examination, and then if they pass the examination the title of dentist is conferred upon them. In Illinois things are a little different. We confer the title of dentist upon anybody who passes the State Board examination, no matter what kind of education he has received. As long as there is one State which will allow such a thing, it will be a drawback to the rest of the States, no matter whether they have better laws or not. The point I wish to emphasize is, that the United States government ought to have supervision in this matter of dental education.

Dr. F. E. Roach read a paper on "Crowns Without Bands."

DISCUSSION.

DR. J. H. PROTHERO: The claims of the essayist in regard to bandless crowns have been so conservative that it is not possible to take much exception to the ideas advanced. He does not claim that the class of crowns under consideration are original with him, but rather that he has modified some of the older methods, substituting some new features and eliminating some of the objectionable ones that have been followed in the past. A comparison of the crown under consideration, with the banded crown will, therefore, be in order.

Crowns to fulfill the purposes for which they are constructed, aside from esthetic considerations, must have a post sufficiently rigid to hold and retain them in proper position when set. They should be so constructed that under the stress of mastication the root will not be split. The medium by which they are cemented to roots must be of such nature that the fluids of the mouth will not dissolve it away, and their peripheral adaptation to the roots must be perfect in order to avoid the formation of shoulders which afford lodgment for food and also to obviate irritation of the free margin of the gum.

Let us see how nearly the crown presented to-night fulfills these requirements:

In this crown the post is so shaped as to offer the greatest re-

sistance to labial or lingual stress, with the minimum amount of metal employed. If the root being crowned has no proximating teeth, or if there should be one of the proximating teeth missing, there would be a tendency for the pin to bend under stress, since the pin is too thin mesio-distally to resist much stress in this direction, and, therefore, the use of such a crown in these cases would be precluded.

In the second consideration the method recommended, by the essayist, of reaming out the root canal, obviates the unnecessary waste of tooth structure and weakens the root to the least possible extent, and, therefore, in the class of teeth where these crowns are recommended there would be little risk of the roots fracturing, and a band would therefore not be a necessity to the strength of the root.

The third consideration, or the means of cementation recommended, for the bandless crown, obviates the danger of dissolution of the cement medium, since gutta-percha is practically insoluble in the fluids of the mouth under ordinary conditions, while the absence of the band permits the surplus material to be readily forced out, thereby enabling a perfect contact of crown base to face end of root to be secured.

In the fourth consideration the method of final adaptation of peripheral outline of crown, to face end of root by grinding to the line indicated in the gutta-percha, enables a perfect joint to be secured free from any roughness or shoulders that might produce irritation or afford lodgment for food.

I do not wish to be understood as saying that the band crown should be discarded, for that is not my sentiment. The band crown has a place, and a very valuable one, especially in bridge work. The abutments should, as a rule, be constructed with neat, well-fitted bands to afford the proper support required by the roots, under the increased strain they are called upon to bear in this class of work. And again, in those cases where the roots that are to carry the crowns are weak or the stress to which they will be subjected is considerable, the banded crown is also indicated. But, as I stated before, the essayist has been conservative and has not recommended this crown for such cases. Therefore, but little exception can be taken to the methods given. It is simply a question of the selection of suitable cases for crowns of this class, and that of course depends upon the judgment of the operator. The essayist is entitled to credit for certain steps in the construction of this crown, which, I think, are origi-

nal with him, and also for the presentation of a paper on a subject on which but little has been written.

The crown, as described, when properly constructed and the case is a suitable one, is both esthetic and serviceable.

DR. A. E. MATTESON: The crown which Dr. Roach has presented so ably is so similar to that I have been using for some time, that it would indicate that we have been working very closely on the same lines.

Regarding the necessity or desirability of extending the crown, so as to form a band, I will say that I believe the cases are extremely rare where it is demanded, and the use should be an exception, rather than the rule. The displacement of the gum alone, with the results of future recession, is not compensated for by all the fancied benefits.

The improved facilities for baking porcelain bodies enables us to produce a crown perfectly adapted to the root, which is strong, sanitary and artistic.

The claim that the band prevents the splitting of the root, I believe to be an error; the root at the gum margin is larger, and stronger, and the fracture begins at the extreme end of the pin, *certainly* at the weakest point of the enlarged canal. This canal should be formed equidistant from the periphery of the root and tapering as the root tapers. The pin should be made to conform to this opening its entire length so that there will be no wobbling in the direction of stress, and it should be made of rigid material.

The pins in the "Logan crowns" are near the ideal form, and are made on scientific and mechanical principles, giving the greatest amount of strength with the least material.

There is, however, this objection, when the canal is larger at its opening from caries or other reasons, the pin is not wide enough to prevent this wobbling before mentioned, a very important matter.

As the essayist has said, this pin should be as long as the crown.

My method differs somewhat from the essayist. I will describe it as briefly as possible.

The root is ground slightly below the gum conforming to the same; producing a double concave surface. Enlarge the canal as indicated. The pin is made of No. 14 platino-iridium wire, flattened by passing through the rollers to No. 17; then holding in a pin-vise at a red heat in a Bunsen flame formed to the enlarged canal with hammer and anvil, as a blacksmith would make a horseshoe nail.

Cut platinum No. 40 enough to cover the end of the root; puncture this in position with the pin, remove and turn it over so that the flap of the puncture will be on the outside, replace the pin and disk and burnish to the end of the root, remove the pin and disk with pliers by grasping the flaps. Unite with 20 per cent platinum solder.

Replace in the root and cut the pin the length desired in the crown. Burnish accurately to the root; this will give the margins of the root on the disk. Trim to this imprint.

Previous to soldering, form over the end of the pin a tube of No. 60 tin foil, and lay aside.

With the pin and disk in place, take an impression in "modeling compound;" remove and replace the pin and disk, if it did not come away with the compound in position. Now place the tin tube on the pin and fill the impression. An articulating model should also be made.

The teeth I use are perforated, such as the "Bonwill" and "Howe" crowns.

I will say that all of these teeth have been withdrawn from the Chicago market, having become obsolete for their original purposes, but can be obtained by special order.

The holes through these teeth give an opportunity to pack and condense porcelain body around the end of the pin and the crown and disk. These teeth would be greatly improved if the perforations were made larger at the base and the conical form reversed.

The tin tube forms a metal socket from which the pin is easily withdrawn and is not marred by repeated use. In conclusion I will say that I have been making crowns which accurately fitted and embraced the roots of teeth since 1887; and have a few in which the roots split. The same results have been noticed in the work of other operators; but since using the above method, none have split, so far as I know.

A MEMBER: With a properly fitted crown of this kind, I would like to ask Dr. Roach how long it would be before the saliva would act upon the cement, if it is used to set it, sufficient to loosen it?

DR. ROACH (closing the discussion): That is a difficult question to answer. Many such crowns set with cement have been known to last for years, while others have failed in a very short time. Cement is so unreliable that I would not take the chance of setting a crown with it, when we have a material, such as gutta-percha, that is so much more reliable.

Dr. Matteson has practically explained the points I intended bringing out with the drawings. In regard to the post, I will say that it is much easier to make it by cutting it out of the iridio-platinum plate. I have also used the square wire and hammered it out flat.

I want to again call attention to the short post as one of the principal causes of the root splitting. And it is no wonder that no longer posts are used when we have been compelled to use such large reamers to enlarge the canal.

Another advantage in using the flat post is the greater rigidity of that portion extending into the crown, which lessens the liability of fracture of porcelain.

I am very much gratified to learn that Dr. Matteson has been using a similar method for so many years. And in view of the pleasing results I have had with the method presented I can recommend it to those who will take the pains to do it right. I have found it very difficult to adjust bands on the superior cuspids and centrals especially, and have the band out of sight without impinging the gum. When the roots of these teeth are not weakened by decay I almost invariably make this form of crown.

I want to say by way of explanation that the pin in one of the models is nickel, used as an experiment for specimen work only. Would not advise its use in practical cases as the heat required to fuse porcelain body will make it very brittle.

I believe there is nothing further for me to say other than to thank you for your kind attention and the interesting discussion.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held at the Victoria Hotel, Oct. 15, 1901, with the president, Dr. L. L. Davis, in the chair.

Dr. J. G. Reid read a paper entitled "The Use of Gold in Cavities Located in the Cementum."

DR. W. V-B. AMES was asked to open the discussion. He said: I have been very much pleased with the presentation of this subject by the essayist, which really never came to my mind in this particular way, and I am inclined to think that Dr. Reid is right in regard to the nature of the cementum, and we may expect a different action in impacting gold against this tissue from that with other tissues of the teeth. I am led to believe that a great many of the marginal failures which we find in this class of cavities and from this class of

fillings, when we get right down to it, and recognize the conditions, can be accounted for on the theory advanced by him. That is all I have to say on that subject on the spur of the moment. If the theory of Dr. Reid will hold, and I am inclined to think it will, we have much reason to fall back on one kind of an inlay or another. It is true, that the plastics, unless it be gutta-percha, are not to be depended on in such cases; yet from the peculiar permanence we get with certain plastics, as cement, in connection with inlays, we may expect to obtain ideal results. I cannot pass a subject like this without expressing my satisfaction of the use of gutta-percha, and especially certain grades of it. For several years I have been testing gutta-perchas as we get them, and recently I have not missed an opportunity to call attention to the erroneous point that is brought out by dentists every now and then in speaking of gutta-percha, namely, the contradistinction of so-called base-plate gutta-percha as compared with other preparations of gutta-percha. In speaking of base-plate gutta-percha, it is very essential for one to know what is meant by it, because the base-plate gutta-percha obtained from one manufacturer may be one thing, and base-plate gutta-percha secured from another may be a different thing. When one makes the statement that base-plate gutta-percha will accomplish a particular object, he should use definite language. Base-plate gutta-percha means nothing in particular. This brings me to a point that I wish to refer to, that after testing the various sorts of prepared gutta-percha and getting crude gutta-percha and loading it up with various materials myself, I have come to the conclusion that for a permanent result and satisfactory working qualities, we must necessarily have some kind of high heat gutta-percha, and after trying nearly everything procurable, I have recently settled upon what is called Flagg's high heat gutta-percha as best for permanence. And while I quarrel a great deal with what Flagg has said about plastics in general, I do think that he can give them all odds on the preparation of this particular plastic. The treatment of these cavities with nitrate of silver, I do not doubt, is very beneficial, and especially allowing the medicament to thoroughly produce its effect, and then filling. It is undoubtedly good practice. I prefer the use of chloride of gold in such cases instead of the nitrate of silver, for the reason that it is more penetrating, and its effect is more lasting. Nitrate of silver is apt to act as an irritant, while the irritation from chloride of gold

would be much less. The discoloration is very decided. It is a purplish black instead of a jet black.

DR. C. N. JOHNSON: This subject, as presented to-night, is a very broad one. It is an important subject in operative dentistry, and the peculiar manner of presentation has struck me as rather unique, and I am very glad indeed that Dr. Reid has brought it before the society. There are mechanical difficulties in the management of these cases, particularly if we use gold, that do not apply to ordinary cavities. I fancy many of the failures in the use of gold may be traced to difficulty in keeping the cavity dry, and forcing the gum out of the way as well as to any injury to the margins of the cavity, as outlined by the essayist. There is always this to be considered, that in condensing gold against the enamel margin, the conditions are very different from those in condensing gold against the margin of cementum, and any operator who does not recognize that difference will so injure the margin of the cavity, where it extends into the cementum, as to make a faulty margin. There is one feature of this question that struck me, as the essayist was reading the paper, and that is, that the major part of these cavities ordinarily, even when the cavity has occurred rootwise of the enamel, is in the dentine rather than in the cementum. We have to go some distance toward the apex of the root in order to get any appreciable thickness of cementum. In many instances, where the neck of the tooth has been exposed for any length of time, we will find the cementum practically gone and nothing but dentine lying there. To make a margin against the dentine or cementum requires a different manipulation of gold from what it does against the enamel margin. Ordinarily, it is a very tedious operation to the patient to press the gum back sufficiently to apply the clamp and rubber dam rootwise of these cavities and put in a perfect filling, and for that reason, in recent years, I have been using inlays in this class of cavities more than in any other place. These cavities are usually ill-defined in outline, spreading over the surface of the tooth to a considerable extent laterally without much penetration, and it is difficult to get a definite margin. If the filling is carried under the free margin of the gum with a perfect joint at that point, this margin is usually satisfactory. If there is any extension of the decay around a filling of that kind, ordinarily it is laterally and not rootwise. In other words, my experience has been that where we have a tooth denuded in that way, the gum tissue will remain more healthy over a perfectly pol-

ished and smooth filling at the gingival margin than over the roughened cementum or dentine. The moment the cementum is exposed its nutriment is gone, particularly in a pulpless tooth, and it becomes a denuded surface, and the gum will not remain so healthy over it as it will where it lies against a smooth filling. That is a difficult thing to accomplish with a gold foil filling, but it is not difficult with an inlay.

What the essayist has said in regard to the mallet in contradistinction to hand pressure, I believe to be good teaching. We can get sufficient density and adaptation of the filling with hand pressure, without using a mallet on this kind of filling, except perhaps on the surface. I occasionally use crystal gold, such as moss fiber for this work, where I do not employ inlays. The reason is that it can be condensed rapidly. There is always a feeling on the part of the operator that there is a possibility of moisture leaking through. The crystal golds can be put in in larger masses, and sufficient density can be gained with hand pressure, and the filling completed more rapidly than with the ordinary foil.

DR. E. J. PERRY: I do not recall seeing a cavity in my life in the cementum that did not extend into the dentine and also up into the enamel. When I get such cavities I consider myself in deep water. I have to fill such a cavity to-morrow. My method of procedure is, first, to pack the cavity with base-plate gutta-percha, and crowd back the soft tissues, so that I can see the margins of the cavity. Cavities in this location are very sensitive to thermal changes. After the cavity is prepared and the margins well finished, I wipe the cavity out with oil of cajuput before I insert my filling, which is frequently made of Hill's stopping. However, before I do that, I try with a piece of gutta-percha. I am particular to get the right amount of gutta-percha. I can add to it in the body of the filling, but I do not think in my experience that an added piece of gutta-percha is likely to stay. I want to have it on one piece, and work it up to the walls of the cavity, after wiping it out with oil of cajuput. I must confess that I have my share of failures in the treatment of this class of cases.

The thought occurred to me that the illustrations used by the essayist in regard to the cementum would hardly apply. It must be that the cementum is devoid of vitality when *denuded* of the nourishing membrane; when the decay occurs into or encroaches upon it, it can no longer be living vital cementum, and consequently it will

tolerate the presence of a foreign substance, and the bone filled with a foreign substance, with subsequent destruction, will hardly illustrate the conditions met with in the filling of teeth, as the essayist says, in a cavity of cementum.

Of course, the remarks of the essayist are backed up by observation and good judgment. Personally, I have great confidence in anything Dr. Reid says, and I wish to thank him for presenting this subject in such an admirable manner.

DR. ELLIOTT R. CARPENTER: I was very much pleased with the paper this evening, because it has been along a line of thought I have been puzzling over for a number of years. I began to fill this special class of cavities with cohesive gold and the hand mallet, and it was only a matter of two or three years before I saw many failures, and it occurred to me that the teaching I had received along this line in college was forgotten almost entirely, that is, according to the teaching of Professor Darby, tin is a very good thing to use in this special class of cavities. So I began using tin, and I have had very excellent results with it. I gave up cohesive gold in these cases and began using semi-cohesive foil, inserting it almost exclusively with hand instruments, largely of the Royce pattern, and especially of some special types of instruments I have of my father's, with the turned rockers, and I have had much better success and more reliable results in the use of semi-cohesive foil in these cavities than by cohesive foil. For some time I had trouble in applying the rubber dam satisfactorily, and I finally ran across powdered cocaine as an obtundent, and after applying the rubber dam, before putting on the clamp, I would draw the septum of the dam alongside of the tooth I wished to clamp, and pack my ground crystals of cocaine away down under the free margin of the gum so as to anesthetize the pericementum as well as the gum itself. In that way I have been able to push the gum down out of the way without severe pain to my patient, and have been enabled to reach all points of the cavity without any trouble. The leakage that often occurs in those cases of cavities from around the clamp I have overcome in many instances by using a small pledget of cotton underneath the buccal jaw of the clamp, the cotton being soaked with a little sandarac varnish, and excluding moisture in that way.

DR. J. E. HINKINS: The essayist about a year and a half ago called my attention to this class of cavities. Since that time I have been pursuing a different course from what I had previously. Up

to that time I was fond of using cohesive gold, and used it almost entirely. If there is a cavity in the cementum, I use a saturated solution of nitrate of silver, or a saturated solution of chloride of gold, and thoroughly cauterize the cavity under the free margin of the gum. I do this, using a pellet of cotton or a piece of bibulous paper. I then mix cement, press it up with my finger, and hold it there until it sets, and have the patient return at the end of two or three days. Usually it stays there for three days. I remove the cement, cauterize the parts again with nitrate of silver or the chloride of gold, and make a second application of cement. The reason I use the cement is to press the gingival margin clear up above the margin of the cavity, so that I can apply the rubber dam with little trouble. I prepare the cavity, fill it in the usual way, either using noncohesive gold or moss fiber. I use hand pressure. When I used adhesive gold I found, after the fillings were put in a year or two, that frequently there was an overhanging margin. I attributed this to the friction produced in polishing down the hard fillings. It produced a condition which the cells were not able to repair. There was a kind of necrosis of the cementum above the filling, and if you press the gum away, where you find the gold overhanging, you will find a soft carious condition, not exactly dead tissue. But it is soft and almost pulverized. I do not think in the last year and a half I have polished one of these gold fillings with the rubber dam on. As soon as the filling is inserted, I remove the rubber dam. I keep a continuous stream of warm water, to prevent any friction. I have had better results with this method than any other.

The trouble I have had with gutta-percha in this class of fillings is the expansion I get, whether I use base-plate or any other combination. I do not know whether any of you have had this trouble or not, but I have never been able to fill this class of cavities with gutta-percha with satisfaction to myself. Whether there is anything in cauterizing cavities with nitrate of silver or chloride of gold in preserving the teeth, I am unable to say. However, since I have adopted it, I have had better success.

DR. E. J. PERRY: It occurs to me that we are not talking about the same class of cavities. I had in mind a class of cavities occurring in persons beyond middle age, say fifty, fifty-five or sixty. I was not talking about those gingival cavities that occur in younger people. I concede that they probably should be filled with gold. I was talking about cavities that occur where the cementum has been

largely exposed and the gum has receded, and the exposed pericementum is dead and the tooth is nearly loose. That is the class of cavities I was talking about.

DR. C. S. CASE: We have had a good paper to-night from the essayist. Of course, we are all very grateful to him for writing on such a practical subject. It has been so long since I have filled a tooth that I have almost forgotten how. But the thought has occurred to me that cavities might be classed under two heads, one occurring in younger people, extending below the margin of the gum, the gum surrounding the cavity, more or less, inflamed and swollen on account of the roughened surface. As Dr. Johnson has remarked, these cavities usually extend laterally, and not rootwise. They seem to run around the tooth to a considerable extent, and spread out, leaving a roughened border or edge to the cavity. In that class of cavities there is far more in the manipulation and method of filling than in the material used. I believe, with the essayist, that the use of cohesive foil with a mallet would be poor practice. I have filled a great many cavities of that kind, and I have been particular to follow some method by which the margin of the cavity could be completely freed, so that I could get a definite border to the cavity. Of course, it is shallow because it is not a great distance to the pulp.

My method has been in approximal cavities to adjust a matrix that I made at the chair, fitting it to the root of the tooth, so that it would slide down and completely free the surface involved, in order that the rubber dam could be forced down and keep out the moisture from the surface while the cavity was being filled. In the anterior teeth, where it is impossible to use a matrix of that kind, I used for a number of years the handle of a spoon that I filed off to fit the surface of the tooth, sliding it down and holding it in one hand while I excavated, and partly filled the tooth with the other, holding the rubber dam so that moisture could not get in, and I could see perfectly the margin of the cavity. It had been my practice for a number of years to use in these cavities, where they were not exposed to ordinary view, fibrous tin filling, using what is known as "Robinson's tin" for filling the bottom of the cavity. That brought it up even with the margin of the gum which had more or less receded; then the matrix could be taken away and the rubber dam would come against the tin filling, and from that on filling the cavity with gold.

With reference to the tin and gold combination, the tin seems to harden and at times becomes almost as hard as amalgam. In the

class of cavities of which Dr. Perry spoke, in older people, I have seen many where they did not even touch the enamel border itself, but were located completely upon an exposed root. The roots were decidedly exposed, and in a great many of these cases where the teeth were not decayed other than on the roots of the teeth alone, in tobacco chewers I have seen the decay often extend more than half way around the teeth, being confined entirely to the roots of the teeth. Those cases I have always filled with amalgam.

A case came to me a while ago with pyorrhoea, a young woman, twenty-two years of age. The left central incisor was considerably extruded, or forced out of the socket, and with a large cavity on the distal surface. The tooth was very loose. Dr. Gilmer referred the case to me, and when I discovered the cavity it was covered more or less with inflamed gum. I referred the patient back to him to have the cavity filled. I do not know what kind of gold he used, but it was perfectly smooth and finely finished. The tooth was then intruded or forced back into its socket, and it was a great pleasure to me to see that the gum that had receded more or less became apparently restored. It seemed to throw out a new proliferation of gum, and came down between the teeth and cover completely the filling, and down to the border of the enamel. A prominent dentist of New York city advised her to have the tooth extracted. I have seen her recently, and, so far as I can see, the gum completely covers the filling.

DR. W. C. FISHER: During my short professional career I have learned one thing, and that is, whenever a gentleman in our profession, and in any of the allied professions, fails in an operation, if he can do so, he is very apt to attribute the failure to the exhibition of some pathological freak. For about two years I have had such a case in mind, and I have been looking for that pathological freak. The case was that of a lady who had five such cavities as Dr. Reid has spoken of, three of which I filled with hand pressure, and two with the mallet. The two that I filled with the mallet I had to refill in ten months' time, using sponge gold.

The point has been brought out that the cementum receives its nourishment from the pericementum only, but we are told by histologists that the cementum and pericementum are developed from identical tissue. Further, the same histologists tell us that the dental canals end in three ways—in loops, anastomoses, or by passing into the canaliculi and lacunae of the cementum. If these canals carry nourishment to the dentine, why not to the cementum?

Another question referred to was the use of semi-cohesive gold. I would like to ask what Dr. Carpenter meant by semi-cohesive gold. Can a metal be semi-cohesive? Must it not be either cohesive or non-cohesive?

DR. ELLIOTT R. CARPENTER: In reply to the question of Dr. Fisher, I agree with him that the gold must be either cohesive or non-cohesive. But the manufacturers themselves call it semi-cohesive.

DR. FISHER: Does it work differently from noncohesive or cohesive gold?

DR. CARPENTER: It is not as cohesive as cohesive foil. There is a difference in degree in its cohesiveness. It is cohesive, but it is not extremely so.

DR. T. W. PRICHETT, of White Hall, Ill.: I like this kind of dental meeting. It is a little more than I have been accustomed to in my life—something for the inner man and something for the head as well.

The question presented by Dr. Reid is certainly a very practical one, and I have been wrestling with the problem that he has submitted for a good many years, and I have had some hair-whitening experiences along that line. The remark has been made that we ought to be more definite in the classification of cavities that we are talking about in order to be clearly understood. I believe Dr. Reid makes it apply to all cavities that are buccal or labial rather than approximal, from my inference, and in my experience I have had more to do with the filling of labial cavities in the upper teeth, incisors and cuspids, and sometimes bicuspid, in years gone by, before we had as good appliances for controlling the rubber dam as we have to-day. It was a very difficult thing then to make a good filling with gold in a labial cavity. It is difficult enough now with the best instruments we have, and yet I do not regard it as so extremely difficult in the hands of a competent man, where control can be had of the conditions, the dryness which is so necessary, the packing of gold, etc. But if one has time, with most of the cavities of this kind that present themselves, a way can be thought out and worked out to pretty nearly command all conditions of cavities. We should try to make fillings that will last a long time. I should say the most vulnerable point in labial cavities extends to the cementum, and not the conditions covered by the essayist, and it is not necessary that they should be rootwise of the enamel line. Dr. Perry stated that he did not remember seeing a cavity that was wholly located in the

cementum. If it is possible to locate the marginal wall, the cavity wall can be made under the gum margin; you can form a more definite wall and remove all of the decay from the cavity, as well as extend the cavity mesially, distally and gingivally as far down toward the cutting edge, as is necessary, and make it bandlike in imitation of a gold band for a crown. But in putting in a gold filling, Dr. Reid probably does mallet too much in the beginning against the gingival margin of the cementum. It occurs to me, that the method mentioned would be very good if one had delicacy of manipulation enough in starting the filling along the margin, and I suppose it would require retention angles. After getting the filling started you can apply gold along the axial wall far enough to get a stick of gold across and build downward nearly to the gingivo-marginal edge of the cavity, and if you can burnish gold along the gingival margin and around the corners, and not thrust the plugger on to the margin, you will come nearer making a nice margin than you could possibly get by any other method. I believe this can be done. It is true, it requires more delicate manipulation of instruments in that class of cavities around the cementum which is involved than any other; but if you can cultivate a nice dexterity to place gold there tight, it is just as sound a line for preservation as you would have anywhere else. The so-called gingival wall was a terrible thing a few years ago, and it is a bad one yet, but more correct manipulation and better preparation of cavities have overcome that largely. In finishing down to the overhanging line, it is a difficult place for me to make a nice finish along there, and not cut away more of the tooth structure than is absolutely necessary. At any rate, if you are pleased with the operation and can get the gum to grow over the upper third, you are just as safe in using gold as any other material you may see fit to put in.

DR. ELLIOTT R. CARPENTER: The remarks of Dr. Prichett have reminded me of a point I had in mind to speak of before, that is, in working gold over the gingival margin in this special class of cavities I use it in excess. I only partially condense it over the gingival margin, using it in excess, allowing it to hang over the margin, afterward condensing with the rotatory burnishers of Herbst.

DR. L. L. DAVIS: The title of Dr. Reid's paper should be changed a little. I have not heard any argument brought forth as to the use of gold in the kind of cavities already mentioned. The essay-

ist spoke about cavities supposedly above the cervical margin of the tooth, possibly involving the crown. From my general idea, I should say it was a cavity above the cervical line.

DR. CARPENTER: The cavity could not be above the cervical line. It must be below in the cementum.

DR. DAVIS: The essayist condemns the use of gold in these cavities. So do I, as we can put in a better filling with tin and gold than anything else we can employ. We have no mallet force to use on it. We can take a flat burnisher and burnish it after we have packed the cavity to the line of the enamel with hand pressure. We have an even margin; and the cavity is better protected than from the use of any form of gold, whether one uses moss fiber or anything else. Tin has a therapeutic effect that we do not find in gold or in any other metal with which I am familiar. I certainly think that for such cavities as those I have outlined, tin and gold are the only things to use. As Dr. Perry has stated, in cases of old persons, where there has been great recession of the gums, etc., and more especially in those very sensitive conditions, gutta-percha is the material called for, and I think I use just as much gutta-percha as any practitioner. While I have had trouble with its expansion, yet to-day I trimmed off a gutta-percha filling that I inserted fourteen years ago in the mouth of a gentleman whose gums has receded, so that I do not suppose he has more than one-quarter of an inch of the root under the alveolus. He has got gutta-percha nearly all around his teeth. It was necessary for me to refer back to three or four ledgers in order to find a record of the filling of that tooth fourteen years ago.

DR. REID (closing the discussion): I am free to confess that the title of this paper is misleading in a measure, but we know we must always have a heading for a subject. I thought of two or three headings, but the one I selected seemed to me to be most appropriate and to harmonize with what I was trying to get at. I do not think I am mistaken in the manner in which I have headed my subject. Technically speaking, one may find fault with it. When you have passed the line of the enamel margin, you have encroached upon the cementum. You cannot get around that. You have not gotten on to dentine by any means, because the cementum goes to the enamel margin itself. It is thin, and as it grows rootwise it becomes thicker at the end of the root. Dr. Johnson has said that the cavities usually fail laterally, and not rootwise.

DR. JOHNSON: In cases where the cavity is carried beneath the free margin of the gum.

DR. REID: I agree with you that decay is usually lateral in these cases, and not so much rootwise. That is why I contend it is an absorptive process. You cannot pack gold anywhere above the enamel margin without packing it against cementum, and the nearer the cementum approaches the enamel, the thinner it becomes. But, at the same time, it is cementum.

Dr. Hinkins brought out a point that I expected to speak of, and that is the use of white gutta-percha. I only incidentally referred to these materials, and had nothing to do with the filling of these cavities other than with gold. That is what my paper was on, the physical properties of the gold as it was in the mouth, the handling and putting of gold into those cavities. I have no doubt but that gold is just as good a filling material as we can put into those places, but it requires a different manipulation to do it. We must handle it differently from what we do when packing gold on to dentine.

Dr. Fisher brought out another point in which he referred to the fact that the peridental membrane was a tissue by which the cementum was nourished. I did not claim that it receives its entire nourishment from the peridental membrane, because it does not. It receives its nourishment from the internal structure of the tooth—the pulp, if you please. There is a circulation both ways. Because the peridental membrane has disappeared is no evidence that the cementum is dead. If it were dead, it would slough away the same as bone would do. It would come away in a necrosed condition. But it does not do that. It decays. It is not a necrosis; it does not come off by exfoliation. Decay takes place there as well as in other localities of the teeth. Dr. Fisher answered this question very well from a histological standpoint.

Dr. Prichett suggested very nicely that if we were only delicate enough to handle gold as dextrously as we should, at the margins of the cementum, we would get better results, and I am not at all opposed to the belief that burnishing at the margin of the cavity is better than any thrust or hand pressure or mallet pressure. But it requires delicacy of manipulation to do it.

Speaking of filling materials, outside of gold I only incidentally mentioned gutta-percha in connection with the use of silver nitrate. I have considerable faith in red base-plate gutta-percha as a filling material for those cavities, more than in the white.

Gold and tin is a good preparation, and I use it as much as anybody. What I wished to convey in this paper more than anything else was the fact of handling gold in cavities that are under the cementum, and I say you are under cementum when you have left the enamel margin.

REPORT OF ANNUAL CLINIC OF ALUMNI ASSOCIATION OF NORTHWESTERN UNIVERSITY DENTAL SCHOOL, HELD AT THE COLLEGE BUILDING, 146 FRANKLIN STREET, CHICAGO, FEBRUARY 22, 1902.

R. W. PARKER, CLINIC REPORTER.

Clinic No. 1. DR. GEO. T. CARPENTER of Chicago gave a talk on the necessity of strict aseptic and antiseptic precautions in the treatment of so-called pyorrhoea alveolaris. Also exhibited instruments used in treatment of this disease, together with a metal rack for holding the instruments, which could be sterilized along with the instruments. Showed an abscess syringe of clinician's own design with a flat, thin point which could readily be passed into a pocket alongside of root without injury to soft tissue. Recommended thin, pliant points of hickory wood for use in application of medicaments. No splinters to irritate, no breaking.

Clinic No. 2. DR. JOSEPH HEAD of Philadelphia restored the mesio-incisal corner of an upper left central incisor by means of a porcelain inlay. Clinician employed Whitely's high fusing inlay materials and a Hammond furnace. Inlay was set in Harvard cement and presented a very nice appearance both as to contour and shade.

Clinic No. 3. Oral surgical clinic by DR. THOMAS L. GILMER of Chicago. Case 1. This was an exhibition case which had been operated upon on Feb. 14, preceding. Patient, Swede, age sixty-eight, male. Caries of superior maxilla had occurred and in the operation all the upper teeth to the left of the median line had been removed together with the alveolar process, floor of the antrum of Highmore, portions of the palate bone and the palatal process of the superior maxillary bone. Case progressing nicely. Soft tissues of palate were pendulous so stitches were taken to secure the parts.

Case 2. Lady, age twenty-three. End of root of upper incisor

tooth denuded by alveolar abscess. Incision made and end of root made smooth. Wound washed and dressed.

Clinic No. 4. Owing to DR. ELGIN MAWHINNEY being confined to a hospital as the result of an operation for appendicitis, he was unable to give his clinic.

Clinic No. 5. DR. D. M. CATTELL of Chicago inserted in a disto-occlusal cavity in an upper left second bicuspid tooth, a gold filling, demonstrating the use of noncohesive gold foil in starting the filling. Clinician finished filling with cohesive gold, restoring the normal contour of the tooth crown, with normal contact and interproximal space.

Clinic No. 6. DR. S. STRAITH of Bay City, Mich., extracted seventy-five teeth from the mouths of twelve patients using nitrous oxide gas as a general anesthetic. This was a very successful and interesting clinic and Dr. Straith won the plaudits of his onlookers.

Clinic No. 7. DR. DAVID S. STIVER of Chicago demonstrated a method of making a porcelain molar crown without a band, by making one on a lower right first molar.

Clinic No. 8. A table clinic by DR. J. ELWOOD DUNN of Chicago demonstrating the advantage of the use of pure para rubber in the construction of full or partial dentures over the rubber commonly used. There is less odor, no impurities. Can be vulcanized to be rigid and stiff or with a distinct "springiness" which admits of bending without breaking. This quality renders this rubber of especial advantage in making lower partial dentures. The liability to breakage is decreased many fold because of the temper this rubber has when so vulcanized.

Clinic No. 9. DR. F. H. SKINNER of Chicago inserted a platinum-gold filling in a gingival cavity in an upper right lateral incisor. Cavity was hypersensitive, but was prepared without pain to patient by use of the Hurd inhaler. The demonstration of relieving the patient of all pain by this method of the administration of nitrous oxide gas and free air, with rubber dam in place, was novel and very interesting. Patient was under influence of anesthetic for about four minutes.

Clinic No. 10. DR. HUGO FRANZ of Chicago treated surgically an alveolar abscess which occurred as the result of the perforation of the root of an upper right central incisor, in the making of a porcelain crown. Clinician used acesoria as a local anesthetic, to good advantage. Pus cavity was curetted and wound dressed.

Clinic No. 11. DR. R. H. KIMBALL of Chicago gave an interesting clinic, demonstrating his method of taking plaster impressions for difficult partial dentures. The method is to fill the impression tray with wax so as to conform tray as nearly as may be to the parts and then remove and put in the plaster as usual.

Clinic No. 12. DR. EDMUND NOYES of Chicago demonstrated the use of Hill's stopping as a filling for root canals. Filled the root canals of an upper left first molar. Canal moistened first with eucalyptol, then minute cone of stopping made, warmed on a plugger and pumped in, followed by others until canal is filled.

Clinic No. 13. DR. LELAN O. GREEN of Chicago demonstrated the use of acesoria as a local anesthetic in the extraction of teeth. Clinician extracted thirty-two teeth from seven patients without a particle of pain and no disagreeable after effects.

Clinic No. 14. DR. J. S. BRIDGES of Chicago made two porcelain inlays; one to fill a disto-occlusal cavity in an upper right second bicuspid and the other to fill a gingival cavity in an upper left cuspid. Dr. Bridges made the inlays wholly out of the mouth, using Close's foundation body and Brewster's bodies. Clinician took impressions of cavities in gutta-percha and made models of Britton's cement swaged matrices with the Ash water bottle. Bite was taken to get the proper articulation with the bicuspid inlay.

Clinic No. 15. DR. F. E. ROACH of Chicago implanted an upper left lateral incisor in space left by extraction of deciduous cuspid too long retained, using 50 per cent glyco-thymoline as antiseptic, and 2 per cent solution of cocaine, Hoff's formula, as local anesthetic. Tooth was held in socket made for it, by ligatures about the surrounding teeth. Dr. Roach also exhibited a case of implantation, which had been done five years previously, with very gratifying results. This was a very interesting and instructive clinic.

Clinic No. 16. DR. IRA B. CRISSMAN of Chicago inserted a gold filling in a distal cavity in an upper left lateral incisor, using De Trey's gold.

Clinic No. 17. DR. E. B. JACOBS of Chicago exhibited two porcelain inlays he had made in his practice and demonstrated his method of making same, which is as follows: Take impression of cavity with gutta-percha and make a model from impression of copper amalgam. Take three impressions and always make two models. Then make platinum foil matrix. After first baking re-

adjust matrix in cavity and swage with the Ash water compress. The inlays were set in Archite cement.

Clinic No. 18. DR. RAY N. BAKER of Chicago filled a mesio-occlusal cavity in an upper left first molar. Clinician demonstrated cavity preparation, adjustment of copper matrix made to suit the case, held in place by silk ligature and contoured to restore contact and interproximal space.

Clinic No. 19. DR. CHAS. P. PRUYN of Chicago demonstrated the use of local anesthetic under pressure for the painless extirpation of a pulp.

Clinic No. 20. DR. R. ROGERS of Scales Mound, Ill., showed a method of attaching a bridge to an incisor or cuspid without the use of a crown. The method was to drill a hole in the tooth, to which the bridge was to be anchored, to the lingual of the pulp and parallel to long axis of tooth. Then heavy gold plate was swaged and trimmed to fit the lingual surface of tooth. Then platinum pin was inserted through plate into canal and pin made fast by solder. This served as one anchorage for the bridge, being soldered to it as a crown would have been.

Clinic No. 21. DR. H. H. SCHUHMANN of Chicago exhibited two porcelain inlays which he had made, using S. S. White's high fusing bodies. One in a mesial cavity in an upper left lateral incisor and the other in a distal cavity in an upper left central incisor involving quite a portion of the lingual surface. The clinician used Dr. Peck's system, setting the inlays in Harvard cement, and the results were very satisfactory, and brought forth a great deal of favorable comment.

Clinic No. 22. DR. G. WALTER DITTMAR of Chicago gave a table clinic on a method of filling root canals with sandarac varnish and gutta-percha cones. Canal in an aseptic condition is washed with alcohol to displace moisture. Then walls moistened with sandarac varnish of a creamy consistency, then cones of gutta-percha packed thoroughly into canal. The sandarac varnish acts as a lubricant for the cones and the claim is made that this insures a more thorough adaptation of the root filling, than by the use of a solvent, such as oil of cajuput or eucalyptol.

Clinic No. 23. DR. A. H. PECK demonstrated the use of platinum and gold folds in making a filling in an anterior tooth, with the restoration of an incisal angle. The cavity filled involved the mesio-incisal corner of an upper right central incisor. The result

was very satisfactory. The color of the filling due to the platinum rendered it much less offensive to the sight and the additional hardness imparted by the platinum made it more capable of withstanding the wear and stress in mastication.

Clinic No. 24. DR. A. B. FREEMAN of Chicago demonstrated by a table clinic the use of beads in retaining the rubber dam. The method is to fasten a bead to the center of the ligature by passing the ligature through the bead and securing the latter by means of a knot. Then the ligature is passed between two teeth, and the bead drawn close to the tooth and the ligature tied. Then rubber dam is applied over the bead. Clinician gave also as his method of root canal filling, the use of chloroform in the canal and the cones of gutta-percha inserted and packed to place. Gave as treatment for canker sores in the mouth, the application of nitric acid on an orange wood stick followed by oil of cloves. Also recommended red oxide of mercury ointment for treatment of canker sores and abrasions of lips.

Clinic No. 25. DR. ISAAC SUNDBERG of Chicago placed an amalgam filling in a disto-occlusal cavity in an upper left second bicuspid demonstrating the use of a wedge matrix.

Clinic No. 26. DR. F. M. RICHARDSON of Chicago gave a very interesting two hours' clinic, using the Hurd inhaler, for the administration of nitrous oxide gas, extracting teeth for forty patients without a failure. Much to the astonishment of those present he held his patients under the influence of the nitrous oxide gas as long as he desired, in several cases for five minutes or more.

It certainly was a most interesting and instructive clinic and we hope to have Dr. Richardson repeat it at our future meetings.

Clinic No. 27. DR. W. O. VALLETTE of Goshen, Ind., exhibited a hydronaphthol sterilizer of his own design.

Clinic No. 28. Oral surgical clinic by DR. W. H. G. LOGAN of Chicago.

Case No. 1. Patient, lady, wearing full upper vulcanite denture. Hypertrophy of the gums had occurred because of irritation from ill fitting denture. Under a local anesthetic the hypertrophied tissue was cut away.

Case No. 2. A case for diagnosis. Patient, German, age 24, male. Two years previously patient had been struck on right side of lower jaw by a man's fist. Since that time a tumor had been form-

ing until it had reached at this time the size of an English walnut. Enlargement aspirated and diagnosed as a cyst.

Case No. 3. Patient, male, age twenty-two years, with a cleft palate. Clinician made a few remarks and spoke of proper treatment.

Clinic No. 29. DR. FRANK H. DAVIS constructed a crown for an upper right lateral incisor, demonstrating the use of the Roach wedge-lock facing for crown and bridge work.

Clinic No. 30. DR. B. H. KERSHAW of Chicago demonstrated the construction of a gold crown with a porcelain face.

Clinic No. 31. DR. ROBERT GOOD of Chicago showed a case of so-called pyorrhoea alveolaris which he had by his own method treated and cured. This case showed what can be accomplished in the treatment of this disease by scientific, systematic and painstaking treatment.

Clinic No. 32. DR. B. J. CIGRAND of Chicago in a table clinic demonstrated the adaptability of the Brewster crown to normal and abnormal cases. Also the method of polishing the porcelain crown after grinding.

Clinic No. 33. DR. A. C. HEWETT of Chicago gave a very interesting lecture and demonstration on the analgic influence of chloroform in operative dentistry and oral surgery. Clinician stated that chloroform can be administered to a patient in a sitting posture, slightly tipped backward, with as much certainty and safety as when the patient is in a recumbent position; that it is not necessary to administer chloroform until a stage of complete anesthesia is reached in order to operate painlessly. One of Dr. Hewitt's auditors kindly took the chair and chloroform was administered after the clinician's method. Patient was first instructed as to the breathing and then the chloroform carefully and cautiously administered, from a two-ounce bottle. In a few inhalations patient, though conscious, was insensible to pain. A second auditor took the chair and clinician again administered the chloroform and an impacted third molar was extracted. Patient was conscious during operation and stated to the audience immediately after the extraction of the tooth that he felt no pain whatever. This clinic was very instructive and interesting. In the administration of the chloroform one nostril of patient was held closed and chloroform placed directly under the other. Chloroform was taken away during exhalation of the breath.

Clinic No. 34. DR. JOHN C. KINNEY of Chicago filled a disto-occlusal cavity in an upper right first bicuspid, demonstrating the use of Dr. Hewitt's sterling alloy and gold as a combination filling. Amalgam was used in the distal portion of the cavity and the occlusal portion filled with gold just as soon as the amalgam had been placed.

Clinic No. 35. DR. W. O. FELLMAN of Oak Park constructed a porcelain crown for an upper right cuspid root, using the Roach method. Clinician used Brewster high fusing porcelain, a flat iridio-platinum post and made crown without a band.

Clinic No. 36. DR. LUCIEN H. ARNOLD of Chicago demonstrated his method of pulp digestion by the use of kalium natrium.

Clinic No. 37. DR. CHAS. F. BRYANT of Chicago gave a table clinic on the making and baking of a continuous gum denture, using the Hammond drop furnace.

Clinic No. 38. DR. L. L. DAVIS of Chicago made a gold inlay as follows: Took impression of cavity in cement, then made a counter-die of cement of another color, using Mennen's borated talcum powder to separate the two, swaged a matrix of pure gold and then filled the matrix by melting into it 22k. gold scraps, then trimmed and set with cement. This sort of inlay was recommended of especial value in buccal cavities in molars and bicuspid where the cavity extends far below the free margin of the gum.

Clinic No. 39. DR. L. W. NEVIUS of Chicago demonstrated in his usual good-natured and skillful manner the use of nitrous oxide gas as a general anesthetic in the painless extraction of teeth.

Clinic No. 40. DR. LESTER BRYANT in a table clinic skillfully formed and carved a number of porcelain crowns.

Clinic No. 41. DR. R. C. BROPHY of Chicago baked a number of porcelain cases, using his gas and gasoline furnaces.

Clinic No. 42. DR. C. E. WINTER of Chicago inserted an Archite cement filling in a distal cavity in an upper right cuspid tooth.

Clinic No. 43. DR. J. H. WOOLLEY of Chicago demonstrated the use of noncohesive gold and Ames' cement as a temporary filling, placing the gold over the gingival wall and margin of the cavity and then the cement to fill the remainder of the cavity.

Clinic No. 44. DR. H. A. CROSS of Chicago showed a case of obstinate alveolar abscess upon a lower right third molar and gave his method of treatment of same.

Clinic No. 45. DR. C. F. MONTAG of Blue Island, Ill., showed how to construct gold and platinum crowns with low and high fus-

ing porcelain enamel labial and buccal surfaces. This was a table clinic of much interest.

Clinic No. 46. DR. B. M. FORD of Chicago demonstrated method of setting Logan crown. Placed crown on root of an upper left central incisor.

Clinic No. 47. DR. GEO. E. BROWN of Chicago exhibited a back-action orthodontia wrench of his own invention.

It is rather a difficult matter when one sees so many interesting things and his time is so limited, to get every point in each.

Whatever of mis-statements or omissions there may be are wholly unintentional and the reporter asks forgiveness.

DR. BENJAMIN LORD.

Through the kindness of Dr. G. Alden Mills we have just received word, as we go to press, of the death of Dr. Benjamin Lord, of New York City. He died May 3, at his residence, 34 West 28th St., in the eighty-third year of his age. Dr. Lord practiced in New York for more than half a century, and was one of the rugged old-time conservative practitioners who had little sympathy with the innovations of the age. He did not care for the dental engine, the mallet, nor the rubber dam. He did not believe in contour fillings, and he always referred to amalgam as that "wicked amalgam." But he had a fine class of people for his patrons, and he continued in active work at the chair till near the time of his death. Physically he remained a remarkably well preserved man to the last, a noteworthy record for a dentist of more than four score years. In methods of practice he followed no man's teaching, but was a law unto himself. He was a man of rare and cultured tastes, and held the respect of every one who knew him, particularly those of his immediate associates in New York.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

BOGUS DIPLOMA MILLS.

It would seem strange that after all the contumely that has from time to time been heaped upon the traffic in bogus diplomas, any institution of this kind could be found to rear its serpent head above the dirt, and make a bold bid for patronage. It is a sad commentary on the gullibility of the people when this traffic can flourish sufficiently to encourage any one to go into it. Much complaint has been made abroad, and particularly in Germany, of the selling of bogus diplomas in the United States, and the credit of institutions here which are really reputable has been jeopardized by these reports. The movement of the National Dental Association and the Faculties' Association inaugurated at Milwaukee last August toward the suppression of this traffic received the endorsement of the United States Government, and it was to be hoped that the evil was to be stamped out. This work is still in progress, but now there is danger of disgrace from a new source. Some time ago an institution known as St. Luke's Hospital, located at Niles, Michigan, issued circulars advertising its "certificates" for sale. It was exposed through the journals, but it issued more circulars. The profession generally seems to have been solicited from one end of the country to the other, and worse than all, the names of reputable men in the profession were published as being connected with it, without any authorization on their part. Public denials were made by these men, and the institution was supposed to be branded as unprofessional and misleading wherever American dental journals are read. But now the information comes through the *British Journal of Dental Science* that these circulars are being sent abroad, and this journal makes the significant statement that the institution is incorporated under the laws of the State of Michigan.

What kind of an impression must these things make on the governments of foreign nations? Is there not something wrong

with our legislation when such institutions can exist and boldly push their plans through the United States mails? After all the exposure which has been given this institution it is hardly to be expected that it will work much harm at home, but the impression it may make abroad can do us incalculable injury.

THE MEETINGS AT STOCKHOLM.

The meeting of the International Dental Federation, and of the American Dental Society of Europe, which convene at Stockholm during August of the present year are of sufficient importance to demand more than a passing notice. The American Society of Europe always has interesting sessions and the officers are hard at work this year to surpass all previous efforts. This association forms a most happy medium for native American dentists traveling abroad to meet their confrères, and they are always assured of a most hearty welcome. In this organization are to be found the most progressive and most cordial of all the sturdy band of men who have left America to devote their energies in foreign fields, and the notable successes made by these men is evidence conclusive of their distinguished ability. To meet them is a pleasure, and to mingle with them in society work is a profit.

The meeting of the International Dental Federation is looked forward to by thinking men of the profession as a momentous occasion in the history of dentistry. Internationalism is the keynote of future progress, and it is most opportune that it should be fostered at the present time. There is a broadening influence in this movement that is sadly needed. A profession which attains to so much as does modern dentistry cannot afford to become provincial or narrow in any sense, and the interchange of thought among the leading men of all countries must surely result in great good. There are many things in regard to American dental education which the men on the other side of the water have not well understood, or have not been able to thoroughly comprehend, and we have to some extent thereby been misjudged; while in America, on account of our great material advancement along lines of practical accomplishment, we have been too prone to assume that no good can come out of Nazareth, and that all attainment in dental science is centered in ourselves. There is nothing so narrowing as exclusiveness of any sort, and

nothing so broadening as a vigorous, generous interchange of ideas. Much of the prejudice generated in the past on both sides of the Atlantic will be swept away when the sentiments of each country are better understood. It would be strange if the older civilizations did not have much to teach us that we could accept with profit, and we feel certain that when our methods are analyzed by foreigners they will find something in them of practical value which they may well adopt. In any event the spirit which has prompted the gathering together of the representative men of the profession from all countries is a most encouraging sign of the times, and we predict great benefit from their deliberations.

In view of all this it would seem to be an occasion in which American dentists should take an active interest. As many of our men as can possibly do so should attend these meetings. It is already assured that a goodly number will go, and those who are wavering should decide at once that they cannot afford to miss it.

THE EDITOR'S DESK.

A MAN'S DUTY.

I sometimes find it exceedingly difficult to determine the exact nature of a man's duty in many of the minor affairs of life as well as in those of more serious import. This relates not so much to moral obligations as to the material things of life which enter into everyday experience. Moral duty seems to me self-evident and readily defined, but when it comes to worldly affairs I am sometimes greatly at sea. I find my convictions constantly changing according to my momentary point of view. For instance, I sometimes see a man who goes through life in the easiest possible manner, enjoying to the utmost everything that comes his way, and taking no thought of the morrow. He never worries, never hurries, never works too hard, never assumes responsibilities that are not thrust upon him. If he sees anything he wants he gets it if he has the money, and sometimes he gets it whether he has the money or not. He scorns to think of such a sordid thing as saving money. If he lives to be old and past the earning capacity of his better days he is frequently brought face to face with poverty, want and despair. If he dies in the prime of life he leaves his family or those dependent on him absolutely

helpless, and a prey to the buffets and bitterness of the cold world. And when I see such an one I declare in my inmost soul that this man failed grievously in his duty, and that no man is doing right who does not enter seriously into the problem of providing for old age and of protecting those dependent upon him. In such moments I can see no kind of deprivation and self-discipline too great for a man to practice in his youth and early manhood to the end that his latter days shall be secure from want.

And then again I see other men who strive and save, and deprive themselves of luxuries and even comforts, who make of life a serious struggle without a relaxing ray of recreation, always looking forward to the time when they shall have accumulated enough to be independent, and never willing to divorce themselves a moment from business. And I sometimes see one of these suddenly stricken down and snuffed out, leaving nothing behind him but a memory of toil and hardship. It would seem that there should be something in life for a man besides that, and at such a time I am led to believe that it is a man's duty to accept some pleasure in life as he goes along.

Then in professional matters it is difficult to know what is exactly right. When I think of many of the problems which remain unsolved in dentistry to-day I am overwhelmed by my apparent lack of duty in not setting myself resolutely at work to solve them. In my own eyes I am at that moment a veritable beggar to absorb as much as I have from the profession and give so little in return. A sense of meanness and smallness creeps over me, and I resolve that come what will I shall place myself right before my profession by a more serious consecration to its advancement.

Probably before this resolution is twenty-four hours old I am suddenly brought up against another point of view, by being forced to compare the number of hours I give to the profession as against those I devote to the ones who are near and dear to me in domestic relationship, and I must confess that when this issue is raised I hedge the question. I never quite have the courage to contend for the professional side of the obligation when two or three pairs of brown eyes are searching my conscience in the matter. And, so, what is a man's duty?

I sometimes think I have it answered by the trite phrase "a happy medium," but mediums are not always happy—and then it is so hard to know what is medium.

BIOGRAPHICAL SKETCH.

JAMES GARDETTE—SURGEON-DENTIST.*

BY BURTON L. THORPE, D. D. S., ST. LOUIS, MO.

The two dominant national characteristics of the Frenchman are his love of liberty and fondness for adventure. These were incentives, no doubt, that caused many natives of France to come to America during the Revolutionary War. Many of those thus inspired proved their valor in time of war and at the close of hostilities permanently located here and proved useful and substantial citizens, imbued with love for their adopted country and all its institutions.

James Gardette, second son of Jean Blaize Gardette, was born August 13, 1756, in the village of Agen, département de Lot et Garonne, France.

His father died in his early youth, leaving him without means of support. His paternal uncle, Blaize Gardette, a prosecuting attorney of Agen, gave him a home and an education with the intention of fitting him for the career of a naval surgeon. After an academic course, he was sent to Paris, in 1773, remaining two years studying anatomy and surgery at the Royal Medical School. During his college course, he received instruction in dental operations from Mr. Le Roy de la Faudiniere, a dentist of high repute, of Paris. (At this time such instructions were a part of the naval surgeon's requirements.) He studied the works of Fauchard and Bourdet, both recognized authorities of that time, and equipped himself with an outfit of operating instruments. Completing his college course he was sent to the Hospital at Toulouse, where he remained eighteen months as student and interne. From there he went to Bayonne, where he took the examinations conducted by the surgeons of the Admiralty with successful results and was commissioned a surgeon in the French Navy.

He immediately entered the service and began his professional and naval career (which was short) on board the warship *La Barquaize de St. Jean de Luz*, which sailed for America cargoeed with French soldiers, October, 1777, and arrived at Plymouth, Massachusetts, early in January of the following year. During this voyage occurred an engagement with two British ships lasting three

*The writer is indebted to Dr. A. H. Fuller for use of his library for references.



Your very obedient servant
J. S. Gardette

hours and a half, in which several were killed and wounded on board the vessel of which young Gardette was surgeon.

Upon his arrival at Plymouth, he resigned from the Navy and the first record of his dental operations is at Newport. His son, Dr. Emile B. Gardette, in an obituary sketch of his father, says: "When the French fleet and army arrived at Newport, he was induced to visit that town, and commenced practice as a dentist, the officers affording him considerable occupation for a short time." He later returned to Boston, probably having done all the professional work needed by his countrymen at Newport. In the autumn of 1783 he went to New York. "He was there when the American Army under General Knox, took possession of the city—an inactive but not indifferent spectator of the great events of that interesting epoch in American history."

In the spring of 1784 he located in Philadelphia, where he found several dentists who had preceded him, among whom were Dr. Andrew Spence (who advertised that he was "educated under his uncle, the late Dr. Thomas Spence, Dentist to his Britannic Majesty, King George the Third"), Messrs. Baker, Clabeau, Gilliams, and others.

In the files of the Philadelphia Journal and Weekly Advertiser, April, 1784, may be found his introductory professional announcement as follows:

"MR. GARDETTE.

Surgeon-Dentist, lately from Paris.

Begs leave to inform the ladies and gentlemen that he makes artificial teeth (which imitate the natural) from a single tooth to whole set, and places them, without the least pain, so regular, that it is impossible to distinguish them from the natural ones, and in such a manner, that the persons may take them out and fix them again themselves with the greatest ease; he can place them over stumps, if the person don't chuse to have them drawn. He also takes the scales or tartar from the teeth without pain, and renders them (by help of a powder that he composes) as clean and as white as ever.

As he proposes to settle in this city, and to perform on very reasonable and moderate terms, he hopes to recommend himself to the notice and confidence to such as have occasion for his assistance, and wishes for an opportunity

to make himself as extensively useful in his profession, as he flatters himself his abilities entitle him to expect.

He may be spoken with at the east-side of Front-street, half way between Race and Vine-streets, where the Wax-Work is kept.

N. B. And if any Ladie or Gentleman wishes to have him come to their houses, he will be ready to wait on them on the shortest Notice."

It will be seen from the foregoing that he came to Philadelphia to stay. He proposed to settle in the city, probably moved to do so from the fact that at that time Philadelphia was the metropolis of the country. It was indeed its commercial center, and moreover contained a large contingent of Mr. Gardette's countrymen.

He devoted himself studiously to his professional work and became proficient far above the average operator of his day. His inventive genius made for him a wide reputation at home and abroad. In 1822 he was awarded a medal and twenty dollars by the John Scott Legacy in recognition of three valuable improvements in his profession, the mortise method of attaching natural teeth to plates, flat elastic clasps for retaining plates in position, and for an instrument for extracting teeth. The John Scott Legacy is a fund left in trust by a merchant of Philadelphia for the encouragement of useful inventions in the arts and sciences. The above award is the highest permitted by the founder of the legacy, and was a marked recognition of his skill and ingenuity.

L. Laforgue, dentist and writer of Paris, says in his "*Theorie et Pratique de l'Art du Dentiste*," second edition 1810:

(Translation) :

"The plan of maintaining artificial teeth by means of ligatures is almost entirely done away with by Gardette of Philadelphia; he secures artificial pieces without tying them, even when of limited extent. I have seen such admirably secured and am acquainted with no dentist who equals him in his beautiful and valuable description of work."

Gardette also invented the "gold mortise plate," a method of securing teeth with gold pins, permitting the tooth to rest on the gum tissue instead of on the gold plate. He was one of the first to advocate extraction in youth, to afford space for arrangement in crowded mouths, thus obviating lateral decay. He was an early

advocate of gold foil, instead of lead or tin as a filling material and at one time prepared his own foil by beating it from Dutch ducats.

Gardette has been credited with being the first to apply the principle of atmospheric pressure or suction retention to full dentures. This claim is not founded on fact as Fauchard in the second edition of his work, "The Dentist," 1746, mentions this method. It has also been claimed that he was the first to swage gold plates, but this statement is also erroneous.

Gardette enjoyed the friendship of several eminent medical men of this day. Among them were Doctors Benj. Rush, Wistar, Kuhn and Shippen, who encouraged and aided him in his labors.

His literary work was meager, owing no doubt to his difficulty in expressing his views in the English language. His friend, Dr. James Mease, induced him to publish, January, 1827, in "The Medical Recorder," an article giving his views on "The Transplantation of the Human Teeth," the first and only work from his pen on record. In this paper Gardette opposes the practice of transplanting teeth.

By education and address Gardette was a polished gentleman, and by his cleverness of manner and excellent skill, both in operative and mechanical technique, he established a lucrative and uninterrupted practice as a dentist from 1784 to 1829, a period of forty-five years, but like others who have followed him, his old age was full of disappointments caused by unfortunate investments.

In 1829 he returned to his birthplace, Agen, France, where he remained a short while and then took up his residence in Bordeaux. In letters to American friends he expressed his desire to return to America, but before this wish was gratified he died of gout, August, 1831, aged 75 years. James Gardette was probably the most ingenious and dexterous dentist of his time. His true worth cannot be well overestimated. He is one of the few whose past good work is like a signal light on the sea of time.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

NEW YORK, May 1, 1902.

TO THE EDITOR OF THE DENTAL REVIEW:

Dear Sir:—The regular meeting of the Institute of Stomatology for March was held at the office of Dr. W. E. Hoag, 8 East 43d St., the president, Dr. J. Morgan Howe, in the chair. A short description of his method of making gold soldered tips for the elongation of abraded teeth, was presented by Dr. F. Milton Smith.

The paper of the evening, by Dr. Justin de Lisle, of New York City, entitled "Some Popular Errors about Microbes," was then read, and discussed at some length by, among others, Drs. J. Bono Littig, Chas. Otis Kimball, E. A. Bogue, R. H. M. Dabarn, H. W. Gillette, of New York, and S. A. Hopkins, of Boston.

There was considerable difference of opinion regarding microbes, as is usually the case in a gathering of dentists.

The April meeting of this society was held on the 1st at the office of Dr. S. E. Davenport, 51 West 47th St., Dr. J. Morgan Howe in the chair.

A case of retarded eruption of superior right central and lateral was presented by Dr. Geo. A. Wilson. The patient was a boy of fourteen years of age.

Dr. Wilson exhibited radiographs of the case showing an obstruction below the cutting edges of the unerupted teeth which, when removed, seemed much like a temporary molar.

Dr. E. A. Bogue and Dr. J. N. Farrar both cited cases where they had separated the teeth on either side of the spaces.

Dr. Wheeler also spoke of a case of irregularity in his practice.

A case of four members of one family having one or more supernumerary teeth was reported by Dr. C. F. Allan, of Newburg.

Dr. S. E. Davenport then read a paper entitled "Stray Thoughts on Regulating," which provoked much discussion both pro and con.

As the season draws to a close the interest in society meetings seem to lag until with the first heated zephyrs all but the "guard" fly for the woods or elsewhere.

The only meeting in April which attracted much notice was the Odontological Society of New York, on Tuesday, the 15th. They had a paper of which much was expected and which fulfilled much of the expectancy.

The president, Dr. J. F. P. Hodson, opened the meeting. He endeavored to dispose of the first orders of business, which went well until he called for the amendment to by-laws which would give "an associate member in good standing at the end of three years the privilege of being transferred to the active list."

There are other rules which the foregoing amendment would violate which stipulate that members for the active list should have contributed something to the profession or etc.

The amendment was laid on the table, to be taken up next Fall probably, when we may hear more of interest.

The paper of the evening was finally called for. Dr. Chas. McManus, of Hartford, Conn., was the essayist, the title of which was "The Makers of Dentistry." It was illustrated by projecting on canvas the photographs of many dentists who had passed out of life, and three or four of those still living. Dr. McManus said that the excuse for his paper was a desire to stimulate dentists all over the world to gather such data while it was not too late, that would give authentic dental history, something that we could rely upon. He said that much valuable work had been done in that direction by the committee of the National Association appointed for that purpose, but that a real history is sadly incomplete. He showed on the screen photographs or reproductions of authentic paintings and prints of the following:

Ambrose Paré, who practiced the art about 375 years ago, Fouchard, John Hunter, James Mills, James Daniels, John Baker, Paul Revere, James Gardette, Joseph Lemaire, Josiah Flagg, John Greenwood, dentist to his excellency, George Washington; Edward Hudson, of Philadelphia, John Randall, of Boston; Leonard Kecker, John and Josiah Spooner, Duchameron, Audubon, Chas. W. Piel, John Joseph Sayre, Horace H. Hayden, of the American Society of Dental Surgeons, Chapin A. Harris, Horace Wells, John A. Riggs, Dr. G. G. Morton, Eleazer Parmlee, Sir Lyman Brown, Elisha Townsend, Amos Westcott, of Syracuse, Asa Hill, Joseph Richardson, Jonathan Taft, Robert Arthur, who was first to acquire the degree of D. D. S., S. P. Custer, T. B. Gunning, E. J. Dunning, Thomas W. Parsons, Edward Maynard, J. D. White,

Samuel Stockton White, S. W. Stockton, J. H. McQuillen, Wm. H. Atkinson, Wm. H. Dwinelle, Frank Abbott, James E. Garretson, Wm. H. Morgan, George H. Cushing, W. W. Allport, H. J. McKellops, Corydon Palmer, Dr. Barnum, J. G. Morris, R. W. Varney, Marshall H. Webb, W. G. A. Bonwill, W. H. Burchard, Thomas W. Evans, B. J. Bing, E. Magitot, William Herbst, Sir John Tomes, Charles S. Tomes, Sir E. Saunders, Dr. John Smith, Sir Michael Foster, G. V. Black, J. Leon Williams, W. D. Miller, A short biographical sketch generally accompanied each picture, which made the subject very interesting. Dr. McManus was highly complimented on his ability and good work done by some of the older members, such as Drs. Jarvie, Perry, Kingsley, Mills, etc.

In the afternoon of the same day, April 15, a session of clinics was given by the Odontological Society, which brought out quite a crowd.

Dr. Wm. A. Capon, of Philadelphia, gave a clinic in which he demonstrated from start to finish his method of constructing his jacket porcelain crowns, and also presented patients wearing this style of work which showed the advantages of the system in a practical way.

Dr. Robert C. Watkins described a method of examination of fresh specimens of blood with the microscope, for the purpose of diagnosis of certain abnormal conditions of the system, some of which are existent in cases of pyorrhoea alveolaris. Dr. Watkins is the same who read the paper on a similar subject before the Central Dental Association of Northern New Jersey, and showed there on the screen with aid of the lantern some things which he did not portray at this clinic.

What interested all was his method of showing what he termed the movement of the blood. Many allowed their arms to be punctured for the purpose of procuring a fresh sample of blood which was transferred immediately on cover glass to a microscopical slide, then immediately placed under the microscope, when a peculiar motion of the corpuscles was seen which lasted only part of a minute, due undoubtedly to the pressure of the cover glass on the material beneath. Dr. Watkins claims that the diagnostic possibilities of the condition of the blood is wonderful and that we have but just begun to interpret it.

Dr. W. M. Bailey, of New York, demonstrated the use of

soft foil in simple cavities and in compound cavities in combination with cohesive foil. Charts were used to explain the methods and instruments used.

Dr. Nelson T. Shields demonstrated the merits of a saddle-back porcelain tooth set in a metallic socket, which certainly contributed much to the appearance of crown or bridge work.

Dr. Geo. Evans showed the application of rolled platinized gold to the formation of gold inlays for cavities in the front teeth, considered too soft to properly permit of the insertion of gold foil fillings.

His method was after procuring a good matrix to build on the surface small particles of gold plate, and fuse together with solder until the contour was nearly reached, then contouring a tip say, to an incisor, with crystal gold, and flowing solder into that. Very beautiful contours were worked up in that way and the results showed highly satisfactorily for that character of work.

Altogether the day of April 15 was a very instructive one.

On Saturday evening, April 19, the Central Dental Association of N. New Jersey held their monthly meeting in Newark. President J. W. Fischer, presided.

Saturday night has proved to be unpopular, so the society legislated to return to Monday nights as time of meeting, to begin in the fall.

The attendance at this meeting was quite poor, but they listened very respectfully to a paper of statistics on "Public Dental Service" by Alfonso Irvin, D. D. S., of Camden, N. J. He said that the subject was an international one, for reports come from all over the world that they are endeavoring to solve the problem. It was discussed last year at the International Dental Congress, and will be this year at Stockholm. Gleaning from the gist of his remarks, he believes that the best way is to educate the public, and dentists should serve the public.

He showed also by figures that there are comparatively few of our 84,000,000 population who are able to pay for dental services. He spoke in favor of a dental corps for the navy where there is none at present, although there is legislation pending.

Surgeon Naidler, of the United States army, said that "no one appreciates the importance of dental service more than the army dental surgeon."

The doctor also deduced that dental caries exists in ninety-five per cent of mouths of school children between the age of six and fifteen years. Sincerely yours,

"THE BOROUGHs."

EDITOR DENTAL REVIEW:

The enclosed letter is in response to one I wrote in answer to desire for suggestions in regard to a difficult case. It may help some one else in trouble if published. L. P. HASKELL.

DR. L. P. HASKELL, CHICAGO, ILL.

Dear Doctor: I wish to thank you again for your suggestions regarding the case of which I wrote you some time ago, where nausea troubled the patient in the wearing of a plate. The lady had had a rubber plate which she had unsuccessfully tried to master for a year. I replaced this with a swedged aluminum.

By taking your suggestion and inducing patient to keep plate in mouth as long as possible, and impressing on her mind the cleanliness of the metal plate, she had very little trouble, and has none at all now.

Please accept my thanks for your kind reply and valuable suggestions. Sincerely yours, F. V. W.

FOREIGN CORRESPONDENCE.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Doctor: With the view of facilitating matters for those who propose attending the meeting of the American Dental Society of Europe, to be held August 12 to 15 inclusive, I beg to append the following: Owing to the heavy booking of steamer berths, it would be well for intending voyagers to secure their return passages in advance. The best way to reach Stockholm is via. Hamburg. (1) Travel tickets only for the journey: Hamburg, Kiel, Corsor, Copenhagen, Malmo; Stockholm return to Hamburg by the same route, \$32.89 per adult, first-class; \$25.78 per adult, second class. (2) Travel tickets only for the route, Hamburg, Lubeck and steamer direct to Stockholm, returning to Hamburg by the same route, \$20.64 per adult, first-class; \$15.86 per adult, second class. [Exchange figured at \$4.90.—EDITOR.]

In the case of route No. 1 the validity is forty-five days, and for route No. 2 the season. As much notice as possible should be given to secure accommodation. The times between Hamburg and Stockholm are as follows:

ROUTE No. 1.

Depart Hamburg: 8:53 A. M., or 11:07 P. M.

Arrive Copenhagen: 6:54 P. M., 10:05 A. M.

Depart Copenhagen: 7:45 P. M., 11:15 A. M.

Arrive Stockholm: 11:25 A. M., 6:45 A. M.

ROUTE No. 2.

Depart Hamburg: 12:00 noon, 2:00 P. M., or 3:40 P. M.

Arrive Lubeck: 1:21 P. M., 3:32 P. M., 4:53 P. M.

Depart Lubeck about 6:15 P. M., Wednesdays and Saturdays, occupying about forty-two hours, but times for the coming season not yet fixed.

Yours truly,

L. J. MITCHELL,

Hon. Sec'y.

Any further information that may be desired could be obtained from Messrs. Cook & Sons, 261-262, Broadway, New York.

REVIEWS AND ABSTRACTS.

DISEASES AND INJURIES OF THE TEETH, including Pathology and Treatment. By MORTON SMALE, M. R. C. S., L. S. A., L. D. S., Dental Surgeon to St. Mary's Hospital, Dean of the School, Dental Hospital of London, Member of Board of Examiners in Dental Surgery Royal College of Surgeons of England, and J. F. COLYER, L. R. C. P., M. R. C. S., L. D. S., Dental Surgeon to Charing Cross Hospital, and to the Dental Hospital of London. Second edition, revised and enlarged, by J. F. COLYER. Published by Longmans, Green & Co., London, New York and Bombay. Pages, 685. Price, cloth \$7.

This is a most interesting work and shows a very wide range of treatment for a single volume. It could not be expected that an extended and detailed consideration of every phase of dental disease could be given in one book, but the authors have made the most of their space and have not wasted words. The book is profusely illustrated with more than 600 cuts, some of

the most interesting of which are given under the head of "Variations of the Teeth." The literature of the profession has been diligently searched to throw light on the various subjects treated, and in this, the second edition, there has been much revision and enlargement. Some of the nomenclature in this volume sounds incongruous to the reader of our periodical dental literature of to-day, such for instance as calling the upper teeth "maxillary" teeth, and the lower ones "mandibular" teeth. The peridental membrane is called the "periodontal" membrane, and the disease commonly known as "pyorrhoea alveolaris" is termed "acute and chronic suppurative periodontitis." This leads to the parenthetical reflection that it is high time for the profession to settle on some one name for this disease. It is a reflection on the learning of the profession that a disease which has been so long rampant as this one has should still suffer such a confusion of terms, and it is largely to be accounted for on the apparent lack of definite knowledge as to its etiology, pathology and treatment.

The authors of this book have undoubtedly grounds which seem sufficient to them for the adoption of the terms they use but in some instances it is difficult for the reader to feel altogether at home in studying the volume. The book is, however, well worth studying, and should be in the library of every dentist.

COLLEGE COMMENCEMENTS.

LINCOLN DENTAL COLLEGE.

The second annual commencement exercises of this college were held April 16, 1902, at Lincoln, Neb. The following is the graduating class: Elizabeth C. Field, B. A., William H. Linn, George W. Masters, William A. Woodward, Larsh S. Gilman, Earl R. Truell, Lloyd B. Waggoner.

KEOKUK DENTAL COLLEGE.

Commencement exercises April 14, 1902. List of graduates: John C. Black, John W. Babb, Joseph D. Chenoweth, Martin Dewey, J. E. Forney, H. E. Hurst, Harry E. Hewitt, Lester B. Hobbs, Elwood Jacobson, Martin Long, Frank M. McClurg, John W. Reblitz, John L. Riniker.

PITTSBURG DENTAL COLLEGE.

The sixth annual commencement exercises of this college were held April 30, 1902. The following is a roll of the senior class:

Artman, A. J., Blackburn, M. W., Boner, J. C., Broomfield, L. W., Buterbaugh, F. C., Churchill, M. E., Conaway, W. B., Crawford, S. M., Deeds, T. A.,

Douthett, S. H., Ellis, C. H., Findlay, F. A., Frank, S. Warren, Freshwater, M. J., Gibson, M. Ross, Giles, D. G., Grant, Harry E., Guckert, Clarence S., Hayes, R. E., Hess, Herbert, Heyl, Asa W., Hysong, J. H., Jackson, Leo H., Jelley, George A., King, Edward Duff, King, D. L., Linhart, W. O., Maier, Louis G., Masters, Frank R., Mohny, B. T., Moore, James H., McAlpin, Victor H., McCandless, H. A., McCullough, A. W., Nelson, J. R., Pennington, Jesse, Phillips, James B., Proven, John R., Reichenbach, Albert, Robison, George S., Robinson, F. C., Roy, Robert C., Shade, George F., Sugden, James M., Taggart, Sue L., Thompson, Walter C., Walker, J. W., Wiegering, W. P., Wilson, Frank H., Warren, D. H., Wells, J. B., Kirk, J. Burt.

NEW ORLEANS COLLEGE OF DENTISTRY.

The annual Commencement exercises of this college were held Tuesday, May 6, 1902, at the Grand Opera House, New Orleans. List of graduates: Harry James Siess, Carl Horace Weber, William Roeling, Joseph Peter Wahl, John Holmes Beatty, George John Mire, Paul de Verges, Oscar DeWitt Varnado, Thomas Harris Cotten, Marion Absolom Ledbetter, Robert Emmett Nettles, William Milton Miller, Coburn Hudson Williams, John Joseph Colomb Charles George Lanaux, George F. A. Eckhardt, Charles Henry Beatty.

The Twentieth Annual Commencement Exercises of the Kansas City Dental College were held Tuesday evening, April 29, 1902. The following is the class roll: Frank C. Banta, George K. Hibbard, Frederick William Barber, Rea S. Hoagland, Solomon Lehman Bechtel, Ellis D. House, J. Frank Buckley, J. Larken Howell, Dayton Dunbar Campbell, Fred. A. Koester, Mont. Clair Carpenter, James A. McDaniel, Louis R. Danes, Charles Leon. McGlasson, Arthur R. Dildine, Arthur Brooker Ratcliff, J. Lone Enloe, Charles F. Stewart, Hugo Ivan Felix, Claude Sydner, Wilton Melvin French, Walter S. Vincent, Frank Dale French, James Scott Walker, Lauren Racine Fritz, Franklin Archer White, Charles Parks Harris, George W. Wise, William Alexander Ring.

DENTAL COLLEGE OHIO MEDICAL UNIVERSITY.

The tenth annual commencement, Dental College Ohio Medical University, Columbus, Ohio, was held April 15, 1902. Matriculates numbered 180. Graduates were forty-nine, as follows:

Albert E. Allen, Anderson Bentz, Karl C. Brashear, Charles W. Brecheisen, Alden Bush, Edgar R. Clure, Jno. R. Cole, Harry Conway, James E. Crawmer, Roy J. Cunningham, Orvie E. Depoe, Perlle L. Dew, Joseph W. Early, John L. Ewalt, Dye B. Gallogly, Roy P. Gillespie, Emil A. Graf, Edward Q. Green, Frank L. Gruber, Tunis R. Hane, Calvin L. Haverfield, Harry E. Hawk, Gillette Hayden, Harry L. Irwin, Floyd B. Jones, Charles F. Kull, Thomas M. Lea, Bud E. W. Lindsay, Frederick A. McAfee, Joseph E. Martin, Walter E. Newcomb, Arthur W. Newell, Elroy Rees, Ira D. Seiler, Camillus W. Sheppard, Judson G. Smith, Peter P. Sperry, Earl B. Sturgis, George E. Thomas, Elvin H. Thorpe, Floyd P. Travis, Joseph E. Wagner, John P. Warner, James Welty, Edward O. West, Alfred T. Wiley, George A. Wilson, William R. Wright, Allen Zimmerman.

CHICAGO COLLEGE OF DENTAL SURGERY.

The twentieth annual commencement exercises of this college were held at the Illinois Theatre, Tuesday, April 29, 1902.

LIST OF GRADUATES.—Randolph Arnold, Ralph L. Ankeny, Frank Conad Aubrey, David William Adams, Frank Wilbert Alexander, Irat John Henry Atkinson, Paul Howard Atwood, Lewis Grant Albright, Herbert Wesley Baker, William Hamilton Walton Ball, William Ray Brooks, Claud Wrenton Bandy, William Bogie, William Everett Blair, Thomas Budge, Frank Edward Blanchard, Paul Arlington Betty, Roy William Bingham, Guy Edwin Bailey, Emanuel Cutrera, Morris Edmund Corley, James Cannane, Guy Reece Churchill, Rolla Otto Crouch, Cleon Dea Collar, Charles Overington Campbell, Paul Clarke, Robert Francis Campbell, Edgar Nelson Collins, Clement Allen Cook, William D. Carroll, John Stafford Conley, Rollin Pritchard Culver, Robert Elias Cockrell, Leon Wesley Cook, Paul Clayton Curran, Claude Chalmers Clemens, Clifford Fremont Clark, Carl M. Cahill, Ph. G., Frank Graham Conklin, Fred Eugene Corliss, William Hewitt Carl, Carl John Christopher, Fred David Campbell, John A. Craver, Ph. G., Guy Fleming Corley, George Henry Coram, John Joseph Cooper, Louis Grant De Armand, Hugh P. Dorsey, Melle deBoer, Jelle deWaard, Charles Russell Dutcher, John Michael Donahoe, Charles Albertson Davis, Frank Alonzo Dean, John William Doran, John Daniel Donahoe, Arthur Newton Davis, Henry George Dressel, Herbert Samuel Donaldson, Rollin Oswald Dickson, Roscoe Arthur Day, Arlington Jordan Evans, Don Woolsey Evans, Arthur Edwards, Linden Lester Eells, William Francis Ferstenberg, Asa Fee, Frederick William Groffman, William S. Goldsmith, Otto Alexis Goetz, Charles Bartholomew Girard, Alfred William Leslie Gilpin, Paul Herbert Geiger, Lewis Elmer Golding, Willis Lewis Gregg, Alvin Grete, Robert Lester Graber, William Leslie Gillette, Joseph Herbert Greenfield, William Philip Gasser, Warren Hosmer Hixon, William Morgan Haller, Joseph Foster Holland, Gustave John Henneman, Homer Clifford Hamilton, Martin Victor Havel, Ph. G., Malcolm Howard Holbrook, Maximilian Theodore Huber, John Louis Helmer, Milo Owen Hunter, Percy Carleton Howland, William Anthony Herrmann, Philip Andrew Helmer, Abel Hanson, Thomas Joseph Holmes, Walter Reynolds Hurd, Victor Hitz, Benjamin Perry Hallam, John Trygve Isaachsen, Robert Jasmann, Edward Jacob, James Bremner Johnstone, Carl Schurz Jones, Arthur Milton Kile, John William Kelly, Ralph Elijah Kanouse, Charles Franklin Kenward, Robert Johnston Lamme, Samuel Ellsworth Linsley, Edward Emmett Loftus, Murdock Farquhar McRae, Jerry Vincent McKee, Joseph Michael McEvoy, John Elmer McLaughlin, Peter Moe, George Pratt Morris, Harry G. Morgan, Lora Charles Milliken, Thomas Martin Mott, Charles Arthur Maher, William David Nicol Moore, William Arthur Millyard, Walter James Charles Morton, Richard Sylvester Moye, Raymond Cecil Mathis, Stanley Stewart McMillan, Charles Albert Marshall, Franklin Gilbert Myers, John Joseph Maloney, John Abner Niles, Vera in Simpson Nevius, Joseph Peter Norton, James Frank Nelson, Leo Alton Neil, Clinton Arthur Nixon, Ph. G., Robert Burray Orr, John George Ohlwein, William Edward O'Keefe, Thomas Michael O'Connor, Frank Casper Perl, Albert Emerson Phillips, Richard Purdum, Elmer George

Peterson, Leslie Ela Pitcher, Emil Perl, Thomas Arthur Penhallegon, Herman Bernard Pierick, Pliny Guy Puterbaugh, Harris Popplewell, Francis Joseph Quinn, Charles Edward Rector, Orie Joe Raffety, Fred Ernest Raiche, Lloyd Eli Rubert, James William Roper, Earl Leolin Read, Fred John Ryder, William Daniel Rockwell, Bruno James Reck, Arthur Peter Rutherford, Owen Leslie Rea, August John Schrumpf, Chester William Sowles, William F. Schmeckebier, Albert Frederick Schaefer, James Lee Summers, Frank Willock Sutton, Harold Orion Scott, George Edward Stevenson, George Walter Spears, James Lionel Scott, Philip Henry Sheridan, Adam Ritchie Speer, Charles Harvey Stone, Wesley Morrill Shaw, Noyce Bruce Smith, Clarence Oliver Simpson, Carl Fred Schultz, Glenn Swenk Soseman, Robert Lee Skinner, John Arthur Steele, Silas Nelson Stevens, Owen Berlioz Smith, Harry Stephen Sherman, John Howard Tuttle, Charles Christie Turner, James Alfred Townsend, Samuel Curtis Thrift, Ruthven Bruce Ticknor, Arthur Melville Tummel, John Arthur Vasumpaur, Anton Vold, William John Frederick Wilkie, Harry Mathews Wettengel, Andrew Beattie Walker, Edwin Francis Wagner, Franklin Strauss Waite, Frank Monroe Wells, Otto Edison Worthington, David Plumly Wheeler, Arthur Cornelius Wherry, George Dent Wilcoxon, Emil Richard Zanglein, Frank Zbornik.

MEMORANDA.

If you get a letter that makes you angry wait till the next day before answering it.

Good luck sometimes does seem to be a tangible asset, but it is usually good hard work that wins the day.

Dr. L. P. Haskell has just passed his seventy-sixth birthday. At least that is what the records say, but we are skeptical. He does not look old, he does not act old, he does not feel old. Documentary evidence may be all right, but in this case we pin our faith to the circumstantial, and we hope Dr. Haskell will always remain young.

WISCONSIN STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Wisconsin State Dental Society will be held at Milwaukee, Wis., July 15-17, 1902. A cordial invitation is extended to all members of the profession to be present.

W. H. MUELLER, *Sec'y*,
21 W. Main St., Madison, Wis.

NATIONAL DENTAL ASSOCIATION.

In accordance with the result of the recent postal card vote, the date of the coming meeting of the National Dental Association will be changed from the first Tuesday of August to Monday, July 28, and will continue four days.

Respectfully,

A. H. PECK,
Recording Secretary.

AMERICAN DENTAL SOCIETY OF EUROPE.

The next meeting of this society will be held in Stockholm, August 12 to 15 inclusive. A cordial invitation is extended to the profession to meet with us. This date will enable those attending the National, at Niagara, July 28 to 31, to be present by sailing via Hamburg after that meeting.

L. J. MITCHELL, *Hon. Sec'y*,
39 Upper Brook St., London W.

DENTIST WILL MAKE A FIGHT—ARRESTED FOR PRACTICING WITHOUT
REGISTERING HE AT ONCE SUES.

VINELAND, N. J., April 24.

Dr. Martin V. Chapman, a leading dentist here, was to-day held for court by Justice Miller on the charge of practicing dentistry without a license. Dr. M. R. Faulkner, president of the Pension Examining Board of Surgeons, of South Jersey, became his bondsman.

Dr. Chapman claims exemption from the law requiring registration, because of years of practice in this State prior to that law, and declares he will carry the case to the highest court if necessary. To-day he began suit in the supreme court for \$5,000 damages for false imprisonment against Dr. Samuel C. Slade, the complainant, who is said to be the authorized prosecutor for the State Board of Dentistry in this county.—*Philadelphia Record*.

NATIONAL ASSOCIATION OF DENTAL COLLEGE FACULTIES.

The Nineteenth Annual Convention of the National Association of Dental Faculties will convene in the ballroom of the International Hotel, Niagara Falls, New York, July the 24th next. The executive committee will meet at 11 A. M., July the 23d.

All colleges are respectfully referred to rule requiring that their annual announcement be in the hands of the executive committee at this meeting.

H. B. TILESTON, *President*.

S. W. FOSTER, *Sec'y Executive Com., N. A. D. F.*

JOLIET, ILL., April 24, 1902.

EDITOR DENTAL REVIEW, CHICAGO.

Dear Doctor: Have been much interested in the paper by Dr. MaWhinney, read before the Odontographic Society and published in THE DENTAL REVIEW for April. I have been using a 1 per cent solution of cocaine somewhat similar to that recommended by Dr. MaWhinney for nearly seven years, with very satisfactory results in extracting teeth. The formula is by Dr. W. T. Wyckoff, of Philadelphia, and is prepared by Henry K. Wampole & Co. I enclose herewith the formula and label, both of which are pasted on each bottle. Does not seem to deteriorate with age.

Yours very truly,

S. FINLEY DUNCAN.

ARTICULATION OF TEETH.

I have been interested in a paper by Eugene Pettit on "A Method of Articulation of Teeth."

Fifty years ago, while engaged in carving and mounting the so-called block mineral teeth, in Boston, a dentist for whom I made some full sets,

always had me carve them so they would slide over each other in all directions.

I did not then deem it necessary or advisable to do it in my cases, although I came much nearer to it in carved work than with the single teeth of to-day. I have, however, been tending more and more in that direction since wearing a full denture of my own, it being especially necessary with my flat lower jaw.

I grind quite a deep groove in the surfaces of the bicuspid and molars. The patient can manage to use teeth more readily, although in a young or middle aged person teeth have the appearance of being worn down, which is not objectionable with older people.

L. P. HASKELL.

COLORADO STATE BOARD OF DENTAL EXAMINERS.

The Colorado State Board of Dental Examiners will meet in the Capital Building, Denver, Colo., Tuesday, June 3, 1902, at 9 o'clock A. M., to examine applicants for license to practice dentistry in Colorado. In addition to written and oral examination, applicants must supply their own patients, instruments and materials, and come prepared to do practical work. All applications must be completed prior to June 3.

For application blanks and information, address

H. F. HOFFMAN, *Secretary*,

No. 611 California Bldg., Denver, Colo.

THE CHICAGO DENTAL SOCIETY, ORGANIZED 1864.

TO THE DENTAL REVIEW:

I enclose the list of officers of the Chicago Dental Society for 1902-1903, elected at the annual meeting, held in Schiller Hall, Tuesday evening, April 1, 1902: President, Elgin MaWhinney; first vice-president, H. J. Goslee; second vice-president, F. B. Noyes; secretary, Winthrop Girling; corresponding secretary, C. S. Bigelow; treasurer, E. R. Carpenter; librarian, H. W. Sale. Member Board of Directors, Edmund Noyes. Board of Censors: W. V-B. Ames, Chairman, C. N. Johnson, A. W. Harlan.

Yours truly,

C. S. BIGELOW,

Corresponding Secretary.

BOSTON BLUE LAWS ENFORCED—NO SHAVE, NO CIGARS, NO DRUGS, NO FRUIT OR CANDY SOLD.

BOSTON, MASS., April 27.

To-day the blue laws were more rigidly enforced than ever before, and the man who procured a shave, a cigar, any candy or fruit, or had his teeth filled or his picture taken should be entitled to a medal. The hotel barbers the dentists, and the photographers came under the ban of the police to-day, as well as the druggists and candy and fruit dealers.

There was only one exception—dentists were permitted to extract aching teeth. All were notified that the making or repairing of false teeth or the filling of cavities meant "labor," and came within the law's proscription. The entire police force became a gigantic detective bureau—every officer was

watching fruit, and back doors of stores, the offices and residences of dentists and photographers and the hotels.

A man could not even procure a shave in his room in a hotel. There were not many violations. It is possible that carriage driving for pleasure and funerals will not be permitted next Sunday.—*Philadelphia Record*.

PATENTS OF INTEREST TO DENTISTS.

- 695,796. Artificial denture, Asa F. Cogswell, Crete, Neb.
695,715. Vulcanizer, Charles P. Fritz, Philadelphia, Pa.
695,491. Toothpick package, Wilhelm Reinhard, Berlin, Germany.
695,625. Crown soldering pliers, Finis E. Roach, Chicago, Ill.
696,099. Artificial tooth, Merrill W. Hollingsworth, assignor to S. S. White Dental Manufacturing Co., Philadelphia, Pa.
696,120. Dental gauge, Clarence R. Vanderpool, Grand Rapids, Michigan.
696,155. Guard attachment for dental engines, Isaac N. Williams, Sullivan, Ind.
696,713. Dental lathe, Jesse J. Brown, Macon, Mo.
696,545. Dental engine wall bracket, Arthur W. Browne, Princebay, N. Y., assignor to S. S. White Dental Manufacturing Co., Philadelphia, Pa.
696,652. Dental obtunder, Alvin F. Merriman, Jr., Oakland, Cal.
696,772. Dental crown slitting tool, George W. Teufel, Philadelphia, Pa.
696,774. Dental articulator, John Tiffin and C. E. Bentley, Pinos Altos, N. Mex. Ter.
696,785. Toothpick holder, Cirilo A. Yarini, Havana, Cuba.
697,326. Dental appliance, Gordon H. Claude, Annapolis, Md.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

THE DENTAL REVIEW.

VOL. XVI.

CHICAGO, JUNE 15, 1902.

No. 6

ORIGINAL COMMUNICATIONS.

A RESTATEMENT OF THE PRINCIPLES OF EXTENSION FOR PREVENTION AND SOME CORRELATED SUBJECTS.*

BY G. V. BLACK, M. D., D. D. S., Sc.D., LL. D., CHICAGO, ILL.

In articles which I published in the *Dental Cosmos* in 1891 entitled, "The Management of Enamel Margins," I first used the phrase "extension for prevention" as expressing a prominent fact in the methods of procedure which I was advocating in cavity preparation in proximal decays. Judging from the amount of discussion which this phrase has provoked and the widespread betterment of filling operations in these surfaces which has resulted, I must conclude that the use of this phrase has been particularly fortunate in aptly expressing a method of procedure that is in itself important. Although this expression can no longer be regarded as belonging exclusively to myself by reason of its having been taken up and pushed in discussion by many others, notably by Drs. Wedelstaedt and Johnson, still I may be excused if at this time I should make a restatement, from my own point of view, of its meaning and of its proper limitations in practice after the years of study that have elapsed since it was first announced.

I may say that the incentive to write the papers on the management of enamel margins was obtained through the attempt to conduct an extended series of clinics for the benefit of the students of the Chicago College of Dental Surgery when I was connected with that school, and critically noting the procedures employed by a large number of excellent operators. The close study that I had given, and was giving to this subject in my own prac-

*Read at the annual clinic of the G. V. Black Dental Club, St. Paul, Minn.

tice, which I now see was peculiarly well adapted to this class of study, convinced me that the manner of teaching methods of practice and the training of dental students in manipulative procedures was faulty in the extreme, and I was filled with the notion that more definite methods should be devised and employed.

My private practice had long been what is termed a family practice, in which many families of children grew up under my care; and in whom I could study the results of treatment in a wide variety of cases from youth up. My system of records, while not very elaborate, were such that I could conveniently make these studies with great accuracy as to the date of operation and methods employed and note the results.

One of the most important steps in these studies, though the wording in my articles of 1891 was not just what I would now wish, was the sharp division of cases of recurrence of decay after filling into two classes. First, those due to the faulty manipulation of gold in packing, or the failure to make fillings completely water tight; and second, those cases of recurrence of decay from an actual rebeginning of the carious process upon the surface of the enamel beside the filling which was in itself perfect. When decay recurs from faulty manipulation of gold, or imperfect adaptation to the walls and margins of cavities *it begins between the filling and the cavity wall* and runs under the filling as far as the adaptation was originally imperfect. *This is recurrence from leakage.* In the second case the recurrence of decay is close beside the filling, but careful examination shows that *it has not run between the filling and the cavity wall*, but is in fact *a new decay that has started in the enamel beside the filling* and is penetrating the dentine in the manner and form of a decay that has started anew superficially. This will usually be semi-circular in form, the gold filling occupying one-half of what would be the usual circular form of the cavity, and otherwise penetrating as an original decay. In proximal cavities as formerly prepared, it was particularly noted that these *occurred at the rounded angles of the fillings at the bucco-gingival and linguo-gingival* in much greater frequency than elsewhere. And also in buccal and labial cavities, in which in those days decay was proverbially prone to recur, *a similar recurrence would appear to the mesial and to the distal of the filling; or to the gingival if this margin was not overlapped by the free margin of the gum.*

These classes of recurrence of decay when studied with accu-

rate records as to dates at which the fillings were made, led to the adoption of means to prevent them. The first class, those from faulty adaptation of filling material, of course led to improvement in methods of packing gold, which in itself might well form the subject of an essay, the principal key to which is the management of the force used, and especially such stepping of the plugger as will constantly bring the condensation against a wall into the form of a wedging of the gold between the cavity wall and the gold already condensed. But this must now be passed with this remark. With it extension for prevention has nothing to do.

The superficial recurrence of decay, or that which formed a new cavity beside the filling instead of penetrating between the cavity wall and the filling required a different treatment. The fault lay beyond the manipulation of gold and must needs be looked for in the plans adopted in the preparation of the cavity. The important fact was that an area of tooth surface that was especially susceptible to future decay, was left beside the filling, and this should have been included within the original outline of the prepared cavity. To do this required the judicious extension of the cavity at this important point; and this was denominated "extension for prevention." This consists essentially in squaring out the bucco-gingival and linguo-gingival angles of the otherwise rounded gingival portions of large or medium large cavities in proximal surfaces, making the gingival wall flat bucco-lingually; while smaller proximal cavities were cut to a medium size and similar form when prepared in the teeth of those very susceptible to caries, and especially in children and young people. If the gum septum did not already overlap the gingival margin, extension was made gingivally to attain this. This squaring out of the linguo-gingival and bucco-gingival angles necessarily carried with it the cutting of the cavities of equal width to the occlusal surface, or to parallel buccal and lingual walls, for the purpose of facilitating the placing of the filling material. It had already been demonstrated to my own satisfaction that this practice was successful in preventing this form of recurrence of decay.

In a paper before the Illinois State Dental Society in 1893 entitled, "The Anchorage of Proximate Fillings in the Bicuspids and Molars," this was supplemented by showing that the probable force of the occlusion was such as to require that all of these fillings be anchored in a step cut for the purpose in the occlusal portion of the

tooth, even though decay existed there, instead of depending upon grooves or dovetails cut toward the lingual and buccal in the proximate cavity as had been the general practice. Coupled with this was the seating of the filling upon a flat gingival wall, and a flat pulpal wall of the step portion to give it still greater stability. In this presentation the force of the occlusion of the human teeth was discussed and the fact pointed out that the dental profession had then no knowledge of its amount in pounds, and the statement made that it probably reached hundreds of pounds. This discussion led quickly to the devising of instruments for the measurement of the force of the bite; notably one by the late Dr. J. J. R. Patrick, of Belleville, Ill., and one by Dr. George J. Dennis, of Chicago, called the gnathodynamometer. The first of these made were soon shown to be insufficient in their register of pounds, and had to be strengthened to full three hundred pounds before the measurement of the force of the bite of the strongest persons could be accomplished. My own instrument, which I have used since 1894, registers two hundred and seventy-five pounds and every year when I take the register of my senior class I find from one to two in each hundred persons who will close it; and evidently could register a greater number of pounds. This abundantly confirmed the necessity for the greater strength of the seating and anchorage of these fillings, as had been contended, and this has become the accepted practice by those who have followed these investigations with a fair degree of accuracy.

But this much was only a part of the program of improvement of method that had been proposed in the papers of 1891. The study of the normal form of the contact point between proximal surfaces and of the interproximal space, and the influence of variations in these forms in preventing or in affording opportunity for the recurrence of decay was presented. The necessity was urged that the best of rounded, or marble-like contact points be formed on proximal fillings to maintain the breadth of the interproximal space, and as the form best suited to prevent injury to the gum septum by food lodgments which would soon produce disease of the peridental membranes, or conditions favoring recurrence of decay at the gingival margin of the filling. Something of this had been urged before under the term "knuckling," but under this term no accurate studies of tooth surfaces, or of the forms of the interproximal space had been made, and after careful considera-

tion of the term and its loose use I decided that the more accurately descriptive term "contact point" would best suit the case and the studies of the surface that were given. Before that time most operators were finishing the proximate surfaces of fillings flat with the separating file. Even those who were making some study of contour, and were making contour fillings, so-called, were still finishing the central portions of these surfaces flat instead of to that marble-like roundness that is the normal form, and that will prevent lodgments of food. For that reason even the larger fillings were, many of them, still failing at the gingival margin because of the lodgment and the fermentation of food, even though the manipulation of gold had been otherwise perfect. And strangely enough, as it seems to me now, the cause of this was persistently overlooked. This seems to have been true in some measure of the work of the lamented Dr. Marshall H. Webb, who in his manipulation, both in cavity preparation and the formation of the contour of proximate surfaces, approached most closely the forms recently advocated. It seems, however, that he was unable to put his plans of procedure aptly into descriptive words, probably from the want of a sufficient knowledge of dental anatomy, and the lack of terms in which to express his thought.

Another feature that was causing the unnecessary loss of many teeth was the prevalent notion that some teeth were soft, and therefore decayed readily while other teeth were hard, and because of that fact resisted decay. The so-called soft teeth did not receive that vigorous treatment the conditions demanded, because of the feeling that treatment would fail. A series of studies published in the *Cosmos* of 1895 showed that this was a delusion; and established the fact that there is no such difference in the solidity of the teeth as will serve as a basis for such a thought. For all practical purposes of resisting decay and receiving metal fillings, the teeth are of equal density whether the patient be young or old. The accuracy of these findings have been sufficiently determined. The cause of the more rapid decay of some teeth than others must be looked for in their environment which will be discussed later.

These studies taken together have placed the treatment of proximal decays and buccal decays upon a basis so different from the former conceptions of the case as to form practically new plans of procedure and new rules of practice differing essentially from the old. But this practice is not, or should not be, founded upon these

studies alone. These only serve for the development the technical or mechanical side of the case; the pathological side is left without consideration, or is studied only in the empirical way by noting and comparing conditions at different times. This is supplied by a study of dental caries and its methods of attack. In this paper I can only mention those fundamental features of the most practical character. First of all it should be noted that decay attacks the teeth only at certain points called areas of susceptibility, and that all other portions of the tooth surface are immune to the beginnings of decay. This is so pronounced that any one of us, in examining a mouth, will invariably give attention to certain portions of the surface of each tooth, its areas of susceptibility, not expecting to find decay beginning elsewhere. For the practical purposes of this discussion these points of beginning of decay are of two classes, *the pit and fissure class and the smooth surface class*. *The pit and fissure class* is confined to pits and fissures of the occlusal surfaces of bicuspid and molars, pits near the junction of the occlusal and middle thirds of the buccal surfaces of the molars, and pits in the lingual surfaces of the upper incisors. With this class, extension for prevention as employed on smooth surfaces, has nothing to do whatever for the reason that in them decay does not recur about fillings except as a result of imperfect operating. It is true, in these, that grooves must be cut out sufficiently to get a margin level enough for a smooth finish, constituting an extension of the cavity, but this is for a different purpose from extension for prevention in smooth surface decays. *The second class includes those decays beginning in the proximal surfaces and in the gingival third of the buccal and labial surfaces of the teeth*. Decays occur on other less susceptible smooth surfaces, as the lingual; but so rarely that they may be ignored in this discussion.

It is to these decays in smooth surfaces that extension for prevention properly applies. The reason for its application to these and not to the pit and fissure class is found in the nature of the surfaces and their relation to that cleanliness produced by the normal uses of the teeth. The teeth have been so formed that the uneven surfaces, or surfaces broken by cusps, with grooves and pits between, are the occlusal surfaces, or those that are exposed directly to abrasion during mastication of food and are therefore subject to frequent thorough cleaning by abrasive action in chewing, except in

the immediate pits and grooves that afford permanent lodgment for debris. Caries always begins on the surface of the tooth—it is produced by microorganisms growing upon the surface of the tooth and acting upon that point and penetrating inward. They cannot act upon habitually clean surfaces or upon surfaces frequently cleaned. They must have more or less permanent lodgment in order to act. The result is that upon these surfaces the beginning of decay is confined actually to the pits, fissures and deep grooves that afford this opportunity for lodgment. Therefore, in preparing them for filling, when strong enamel is reached in the cutting, and no deep grooves are left for the creation of pits beside the finished filling, there is no tendency to recurrence of decay in these surfaces; unless the filling is imperfect in its adaptation to the walls and margins of the cavity.

The conditions of the beginning of decay upon proximal surfaces and the gingival third of buccal and labial surfaces is different in several respects from those beginning in pits or fissures, and these differences call for very radical differences in treatment, and for a much higher order of judgment. Here we have only smooth surfaces; there are no pits and grooves that serve as special points of beginning. On the other hand, these surfaces are habitually more or less unclean. The proximal surfaces are brought into close contact, or near contact in varying degree, and are more or less so situated as not to be well cleaned by the motions of food over them during mastication. This gives more or less constant opportunity for the continued growth of microorganisms in contact with these surfaces, the formation of films upon them, and the beginning of decay. The greater liability is in the most unclean portions and modified liability is present as we pass from this toward the neighboring areas of immunity to decay. Therefore, when decay has attacked the central portion of this area the tendency is for this attack to continue, spreading upon the surface toward the outer margins of the unclean area. If the central portion of the area be cut out when decay has first appeared, and a filling made ever so perfectly, the conditions remaining otherwise similar, it will be only a question of time until decay will destroy the remaining portions of the unclean area immediately adjacent to the margins of the filling. This condition forms the basis for extension for prevention, which means simply that when these conditions are found, and they occur almost continuously in proximal cavities in young persons, the whole area

of liability should be included within the outlines of the prepared cavity.

In the gingival third of buccal and labial surfaces, the conditions are similar though the forms are different. In the cases in which decays occur in these, the curvature of the surface is such that with the prominence of the gum tissue, the gingival portion is not cleaned in chewing food, thus giving the opportunity for the beginning of caries. For this reason these decays are most generally found beginning about the age of maturity or later when the free margin of the gum has shortened about to its full normal limit. In almost every case in which these decays begin at an earlier age, close inquiry will develop the fact that the patient is not using the teeth with normal vigor in chewing food. We find here a similar central area of greatest liability in which decay acts more quickly; with a lessening of the intensity as we recede from a given center, and with the constant tendency to superficial attack in a widening zone toward the angles of the surface where immunity is usually reached. Here, again, if we prepare and fill the central area of decay early, and make the filling ever so perfect, we will, if the conditions remain the same, soon have recurrence, or the rebeginning of decay at the margins of the filling. Again we should apply the principles of extension for prevention, and in the preparation of the first cavity include the whole area of liability. Any other decays that occur in positions where similar conditions exist, should have similar treatment. This expressed in brief the principles of extension for prevention and the classes of cases to which it applies.

A study of the areas of the tooth surfaces which are immune to decay becomes important in this connection for the reason that the extension is for the express purpose of laying the cavity margins in immune zones. The cavity margin must ever be regarded as the vulnerable point and the effort made to place it in an immune zone. It is especially important to study the immunity of the axial angles of the teeth with the reasons therefor. For it must be noticed that in all of these cases the extension is toward the axial angles of the teeth as the zone of safety. In doing this, the study of the anatomical forms of the teeth, the relations of the teeth to each other, and to the soft parts; and the relations of all of this to the excursions of food in chewing, is the important point. When these studies are carried out it will be seen that in the act of mastication, food is parted by the contact point between the proximating teeth

and sweeps through the embrasures onto the sloped surfaces of the gum septum to the buccal and to the lingual and out over and against the axial angles of the teeth. Thus we have habitual cleanliness about the angles, which explains the habitual immunity of these areas. Think over your cases and note how rarely you have seen decay beginning upon either of the four axial angles of the teeth. When decay is seen beginning upon the axial angles of the teeth, or running around them superficially, that person has practically ceased to chew food some time before this has occurred, unless indeed, some special local cause exists. Then the closer the enamel margins are laid to these angles the better, in both buccal and labial cavities and in proximal cavities whenever the conditions call for extreme care.

It will be seen at once, I think, that this study affects prominently the two classes of smooth surface cavities under discussion; i. e., proximal cavities and the buccal and labial gingival third cavities. In both of these the direction of the extension is toward the angles of the tooth, and represents the approach to the zone of safety.

I have frequently stated that if a central area of decay is filled and the *conditions remain similar*, recurrence will result. But will the conditions always remain similar? Certainly they will not. The conditions of susceptibility and immunity are continually changing. Susceptibility to caries is much greater in childhood and youth and the tendency is toward immunity with increasing age; producing marked modification of the susceptibility after the age of twenty or twenty-five years in most cases, and often earlier. The conditions have then become more favorable; and as they improve there is less liability to recurrence of decay when only very moderate extension has been made. For this reason much modification of the extension may be made in the cases of slight susceptibility to decay, or in persons who have apparently arrived at immunity to the beginnings of decay. The difficulty is to judge of this with our present lack of knowledge of the conditions controlling immunity. The greatest extension is required, however, in children with a strong hereditary predisposition to decay, and the least in opposite cases. But we can never be sure the susceptibility will not recur.

In the treatment of these conditions an error of judgment has arisen in the minds of dentists, as has been mentioned, and which recently published studies should correct; viz., badly decayed teeth

have been regarded as poor teeth, poorly calcified, teeth of poor quality, etc. This is in no practical degree true, and especially in regard to the portion of the tooth under consideration. There is a difference in the depth of pits and grooves and in the occurrence of fissures in the occlusal portions of tooth surfaces that give greater opportunity for decay in some teeth and less in others because of differences in these faults. These are faults due to incompleteness of structure, not faults in chemical structure. Such faults do not predispose the teeth to decay any farther than giving opportunity for its beginning, nor in any degree prevent the teeth from standing well after proper and efficient repair has been made by filling. Such teeth are not poor in quality. If regarded in any degree as poor they are poor by reason of being incomplete in the closure of their grooves; as a matter of fact, such teeth are generally large, strong, with powerful cusps, and otherwise well developed. No such faults of incompleteness of structure are usually present in proximal labial or buccal surfaces. It is purely a matter of position with reference to food excursions in mastication, and the fact of failure of cleanliness that causes these surfaces to have areas of susceptibility. This is the basis of the localization of the beginnings of decay at particular points of smooth tooth surface. Otherwise than has been explained imperfect tooth structure has nothing to do in the matter. The teeth of one person are as good as those of another; susceptibility to caries is a matter of environment. It is controlled by the nature of the secretions with which the teeth are surrounded, not by the quality of the teeth themselves.

The qualities of secretions must be sharply divided into local vitiation of secretions or special protection to the growth of micro-organisms, and general conditions of the fluids of the mouth; the one giving rise to local decays from purely local causes while the other gives rise to a general disposition to caries of susceptible areas.

Recently a middle-aged woman presented herself to my clinic with conditions which prominently illustrated the first of these. Neglected decay in early life had caused the loss of a number of teeth in the upper jaw and of several in the lower. The loss in the upper jaw had been supplied by a plate which fitted closely to the necks of the remaining teeth, all of which were decaying badly on their lingual surfaces. In the lower jaw the fillings were standing well, all decay had ceased and the conditions presented were those

of complete immunity. In this case the continuous covering of the lingual surfaces with the thick margins of a rubber plate had confined the secretions between the plate and the teeth and protected the growth of microorganisms in that particular locality and furnished the opportunity for the attack. The result was the same as would have occurred if bands had been worn upon the teeth without cement upon the lingual surfaces. The condition of local uncleanness had been made by the dentist. All such must be regarded as giving conditions of extraordinary opportunity, and sufficient to cause decay in the mouths of persons who are immune to the beginnings of decay under ordinary local conditions.

Then whenever we have the near approach of surfaces in such form as to favor uncleanness we have conditions favoring decay, whether these be artificially made or whether they occur through the particular forms of proximal surfaces. It is for this reason that we should so generally extend cavities in proximal surfaces so far into the embrasures, or toward the angles, that approaching surfaces shall be well freed from each other at the cavity margin. The rule that the lingual cavity margin of mesial cavities in bicuspid and molars shall be so extended that it may be in view across the median line at the central incisors, and that others should be similarly extended, is a good one.

It is mainly the varying conditions of the fluids of the mouth that make for susceptibility or immunity to caries, with the varying conditions between, and it is to this that attention must be most strongly given in the future. Although decay occurs occasionally under conditions that make explanation extremely difficult with our present knowledge, I believe we can now discern and measure fairly correctly the influence of purely local conditions and for the most part avoid evil results due to conditions which give special opportunity for the beginnings of decay, by correcting such as may be found to exist and so planning and executing our operations as not to make others. But the management of the varying conditions of the fluids of the mouth which give susceptibility or immunity is still beyond our control. We can easily note its effects, however, and do much to modify resulting evils by controlling local conditions. General conditions are never so intense as to cause the teeth to decay all over; there are always immune zones of tooth surface in the worst cases of caries, though in some that I have seen every area of tooth surface that has been re-

garded as in any degree susceptible has been attacked. This, compared with the conditions in which the person goes through life without a spot of decay in the teeth, represents the extremes of susceptibility and immunity.

In those cases in which the evil results of decay are fairly controlled, and vigorous chewing of food is kept up by the patient, the tendency is to more or less complete immunity with advancing age. This is prominent enough for us to anticipate it as the rule in the cases we treat, and we should work to that end. This requires the most radical extension in the cases of extreme susceptibility, in order that the teeth may be protected during its continuance. When the condition of comparative immunity has been reached, or is found to be a characteristic of the particular patient, the extension may generally be less radical. If cases be carefully studied with this in view, much difference may be made within certain limits of comparative safety. And yet it must be remembered that susceptibility often recurs, and that even in cases in which immunity seems fairly established it is still unsafe to depart much from the general lines of moderate extension for prevention.

We often hear it said that such and such teeth have had fillings made without extension for prevention that have been in place for many years, and no recurrence of decay has been seen; the fillings have stood perfectly. Certainly this is true; I have myself seen many examples. In most of such cases immunity to the beginnings of decay has occurred in good time and saved the case from recurrence. If we had the account of the fillings and of the teeth that have been lost from recurrence, the list would be a much longer one. Where there is the least need of filling fillings stand best. Very poor fillings will stand in the mouths that have become immune. I have long ago learned not to trust the stories of fillings apparently poorly made which have protected the teeth for thirty and forty years. The teeth would probably have done quite as well with empty cavities; quite as many examples of these that have remained stationary for years are to be seen in persons fifty and sixty years old. If susceptibility recurs, these old fillings to which I have alluded fail to protect; and the teeth decay as though they were not there. I have recently seen a case of recurrence of decay in one of my own patients for whom I had made fillings, without extension for prevention, that had apparently protected his teeth perfectly for twenty-five years. Susceptibility re-

curred recently when he was fifty years old and decay began at the bucco-gingival and linguo-gingival angles of every one of these excellent proximate fillings that had stood for so many years. If I had at first made radical extension in this case the very radical refilling required would not have been necessary. This and similar cases raise the question as to how far we may trust to continued immunity. Observations upon this point have not been sufficient for the formation of such judgment as may be relied upon with safety. The questions of susceptibility and immunity to decay of the teeth are comparatively new in the discussions in dental literature in the broader sense in which I should now consider them. Until more study of them has been made, it is certainly better to make our operations with the view of an ultimate return of a considerable degree of susceptibility than to run the risk of the complete failure that is liable to occur. With more study we may in the future become able to predict continued or permanent immunity with more certainty.

PRESIDENT'S ADDRESS.*

BY DR. G. F. ANDREWS, ST. PAUL, MINN.

Gentlemen: It is my privilege, on behalf of the members of the G. V. Black Club, to welcome you to-day to our second annual clinic.

As an organization we are young, and it is not without some doubt as to the success of the undertaking that we have invited you to this meeting, but the interest shown last year prompted us to further effort; and from the number present I think we have judged the profession in the Northwest correctly. We have endeavored to provide a program that will interest you, and our thanks are due to the men of the neighboring States, as well as Minnesota, for their hearty coöperation and assistance; especially are we indebted to our friends from Chicago, Drs. Black, Johnson and Nyman, who have made a considerable sacrifice to be with us to-day.

Dr. Wedelstadt wishes me to state that you will find two boxes in the clinic room. On one is a sign: "Questions." Anybody desiring information regarding clinics, etc., will please place his

*Read at the annual clinic of the G. V. Black Dental Club, St. Paul, Minn.

written question within the box and it will receive attention at the following session of the club. The other box has a sign: "Suggestions for the 1903 Clinic." We are desirous of making our annual clinics of interest to you; therefore, make such suggestions in regard to essays, operations, etc., that you would like to hear or see, and we will try to follow your wishes. We shall be pleased also to have those who wish to clinic next year place their names in the box, as that will materially assist us in arranging for the next clinic.

I trust that all present will feel free to join in the discussions of the clinics and essays and help to make this the banner meeting of the year.

A FEW OF THE DIFFERENCES BETWEEN THE OLD AND THE NEW METHODS.*

By A. M. LEWIS, D. D. S., AUSTIN, MINN.

The above subject is brought before the friends and members of The G. V. Black Dental Club more as a personal experience than as an essay. The question comes to me—Which method shall I follow, the old or the new? If the new, I must have reasons for so doing. There must be some differences between the old and the new, and these differences must be to the advantage of the new or I would not change. Again, a question comes to me—When did the old cease and the new begin? In answer to this question I would state that the old has never ceased and never will. The multitude will always follow the careless, easy path. Some are too shiftless and lazy to change, some are unwilling to give the time they think is required to do modern work, and some are too old. These latter are satisfied with their work, they say, their patients are also satisfied with their operations and there is no need of a change.

When did the new begin? Many, many years ago in the mind of Dr. Black. I can picture him after his working day was over going back to his laboratory, surrounded on all sides by his books and his papers, before him his microscope, his drawings and his testing machines, and with these around him working into the small hours of the night. The results were not placed in a pigeon

*Read at the annual clinic of the G. V. Black Dental Club. St. Paul, Minn.

hole, but about a decade ago, when compiled in a way he knew was correct, were given to the profession, and then he gave the remainder of his life, without even a thought of being reimbursed, for the benefit of those who desired to know and understand the new methods of dentistry.

Dr. Black may never live to see the world accept his teachings, but he will and has lived to see this great Northwest look up to him, take him by the hand and ask him to lead them.

Let us consider that we are about to prepare a proximal cavity in a bicuspid or molar tooth for a gold filling by present methods. Our first thought is the occlusion. We carefully examine the tooth, notice whether it is mesial or distal cavity and about what amount of stress the patient gives the tooth in mastication. The latter is absolutely necessary, as one person will bite from fifty to one hundred pounds; another two hundred and fifty or even more. After this examination the operator has some definite ideas, he knows about how much anchorage is required to withstand the force of mastication for this particular person. He knows about how much gold should be used that the filling may occlude perfectly. He now has some idea of what is required which would be impossible for him to ascertain after the rubber dam is in position.

His second thought is of the interproximal space. How little attention, even at the present day, is given to this most important subject! We must have an interproximal space both for the preservation of our filling and for the welfare of our patient. Usually this space is destroyed where proximal cavities exist through the ravages of decay. Before the cavity is prepared space should be obtained so that we can restore the integrity of the interproximal space.

We all have patients come to us in whose mouths fillings are crowded together without any thought of interproximal space, and the patients request us to file the teeth apart that they may obtain relief. Hand in hand with interproximal space comes contact point. The two go together. Destroy one and the other is useless.

Notice this is not contact, but contact point, as Dr. Black tells us—let the two surfaces come together as two marbles, and not a broad contact that extends two-thirds the width of the tooth.

We are now ready to prepare the cavity, and extension for prevention must be considered. As this subject will be discussed by others, I shall talk very briefly of it. Experience has taught

me to place it as one of the most important changes in modern dentistry. Ten years ago nobody thought of extending his cavities so as to include the areas of liability to decay, and many informed their patients that decay was just as likely to occur again as originally. To-day, by extending our cavity margins to self-cleansing lines and preparing the cavity by modern methods, we find it unnecessary to make explanation to our patients. We know when they leave our hands that no recurrence of decay is likely to take place, for we have made permanent operations.

Anchorage.—Another important step is the change in anchorage. We have discarded lateral grooves and now make a flat gingival seat and occlusal step. This is an important change, but one that our brother dentists are slow to make use of. Only last summer one of our prominent educators told me he considered it malpractice to cut a step in sound dentine for anchoring mesial or distal fillings in bicuspid or molars; and under no circumstances would he permit a student to use the step anchorage in incisors when the incisal angle was involved. I hope this subject of anchorage will be spoken of in the discussion, for it is a most important one.

Another change is simplification of cavity preparation. The greatest orators of the present day are those who use the simplest language. The best and most successful operators are those who prepare the simplest cavities. A few years ago there were cavities we all dreaded and filled with an alloy, but to-day we fill them with gold with comparative comfort to the patient and with ease to ourselves.

Rapidity in Packing Gold.—Under this head it is necessary for me to look back a number of years. There are men before me who can remember the day when all gold fillings were made of non-cohesive gold. In those days men became expert in the wedging principles and beautiful gold fillings were made. A little later cohesive gold came into use, and what was then called the new school adopted it. The result is that ninety-eight per cent of the practitioners of the present time, who are under fifty years of age, know practically nothing about the use of noncohesive gold. It has been discovered during the last ten years that Dr. Marshall H. Webb and Dr. Edward Maynard had ideas that were valuable; by combining these ideas regarding wedging noncohesive gold and cohesive gold with what we now know about cavity preparation,

the time required for placing gold in the cavity could be lessened almost one-half. This means much to the busy dentist; it saves time, and time is money. It adds to the comfort of both the patient and the operator.

I would suggest to those who are present who do not know how to use gold as spoken of to watch an operation at this clinic where noncohesive gold will be used in conjunction with cohesive gold.

I have written but little on each topic, preferring to leave them for discussion, as each subject in itself, if fully discussed, would require the time allowed for this paper.

In reviewing I will again state the headings, as it is my desire that this paper be discussed under these heads. To my mind the differences between the old and the new methods are in obtaining some idea of the occlusion of the teeth, restoring and preserving the interproximal space, making proper contact points, applying extension for prevention methods, proper anchorage, rapidity in packing gold and simplification of cavity preparation.

WHY FILLINGS PLACED IN THE DISTO OR MESIO- INCISAL SURFACE OF INCISORS AND CUS- PIDS SHOULD BE ANCHORED AT RIGHT ANGLES TO CAVITY PROPER.*

BY S. R. HOLDEN, D. D. S., OF DULUTH MINN.

This subject having been previously assigned me, considerable repetition of ideas must be observed; but because of this, the principles in advocacy lose none of their importance or force, although I am confident it could have been handled to greater satisfaction by others. It is of considerable scope and so much can be said in relation thereto that I will confine myself to personal experience and take but three phases of it.

First—Stress.

Second—Convenience, and

Third—Thoroughness.

Because of its great importance, and because in the past we have so lamentably failed in its consideration, having been mortified by the failure of our well-meant efforts through the lack of this consideration, mention is made at the outset of stress.

*Read at annual clinic G. V. Black Dental Club of St. Paul.

Fillings placed in the disto or mesio-incisal surfaces of incisors and cuspids must be anchored at right angles with the cavity proper to give them strength and durability, both as to their body and anchorage.

(There is an exception to be noted as to the cuspids, which will be considered later.)

It does not do to employ, in the light of present day advancement, the older methods of gaining or attempting to gain anchorage for the retention of the filling wholly in the cavity proper, if for various reasons it becomes necessary to remove the distal or mesial angle. That portion of the filling near the incisal surface does not, because of its lesser body strength, in its lesser bulk, withstand the force of stress in cavity without right-angle anchorage to the same degree as the cavity with this right angle anchorage or step. This is determinable beyond cavil by investigation. It certainly must be appreciated at a glance that a cavity so cut as to place its anchorage portion at right angles will give the filling that much more security, stability and strength at precisely the point where otherwise it would be weakest. When a cavity is prepared with thin enamel walls, unsupported by dentine, the moment fillings formed in such cavities are made to share in the activities of the mouth there is to be constant apprehension of their utter failure. If it does not come to-day it will come to-morrow. If the lingual wall is frail, being unsupported by dentine to a considerable distance in the direction of the axial wall, this, of course, necessitates the removal of this wall or plate of enamel to a corresponding amount toward the axial wall. As a result the finished filling presents a great amount of surface, which in the stress of mastication and general use of opposing teeth will have to offer a proportionate resistance. It is not reasonable to suppose for a moment that this can be successfully accomplished without aid further than the confines of the cavity proper. To this add the position of one of the lower teeth, it being in advance of the teeth of either side; now hammer the lingual surface of this filling with this. To this condition also add the fact that this particular tooth may be and often is rotated somewhat in its socket, presenting to this surface of the filling an angle with a dogged determination to dislodge that filling. Supposing further that this tooth in its advanced position rotated and with the prominent angle is possessed by a person of full habits and healthy, strong root membranes. What be-

comes of the walls and the filling, if we have not the right angle or step anchorage? Now and then some one will raise his voice and say the filling will stand. Imagine it! Here we have a trio of conditions of force that augers ill for anything but the strongest that attempts to stand in its way.

If a filling is made to full contour in a cavity in the mesial surface, with mesial angle removed, and the occlusion is such that the incisal third receive the full force of the impact, the time will be of comparatively short duration before it will stretch and lift away from the margins, permitting leakage and consequent recurrence of decay, meaning a further submission by the patient to the fatigues of the dental chair and loss of time and of vital energy to the operator.

It is noticeable that in some mouths there is a very appreciable wear of the teeth from year to year; hence again in this condition we must lay our plans for the future welfare of the filling. In these cases, while at the time of the operation there may be a sufficiency of dentine to support the mesial angle, the markings are such that we readily conclude the only safe method of procedure is in the removal of the angle. If this precautionary measure is not adopted the foundation is being laid for certain failure. If this pleases, well and good, but the man of such inclinations and convictions is laying up trouble for the near future that will confuse him and place him in need of excuses.

If the mesial or distal angles are checked and supported by little dentine or entirely without the support of dentine, unless temporary work is the aim, they should invariably be removed, as they will never endure in such condition. These faulty angles, if allowed to remain, are further impaired in the placing and malleting of the filling material. In the beginning of the operation the check may be slight and hardly noticeable, but before its completion this defect will most likely be of considerable extent. It must be admitted that the wall without fractures maintained by well-founded support is to be preferred and is far more likely to stand than the fractured wall, the foundation of which is uncertainty at the best.

It seems for some inscrutable reason to be hard to claim the attention and win the willing respect of many an operator sufficiently to induce him to believe, accept and adopt these principles

as facts, though they are clear as the light of day to any thinking mind.

It is well to reiterate that we have been slow in coming to a full sense and realization of the strength required in fillings, because of the power of the bite developed in the closure of the jaws in the mastication of food. And it is time, full time, that this phase of the subject should be given our careful and anxious attention. By intelligent and painstaking effort and investigation we are being benefited in a definite knowledge of the force of the bite, therefore the requisite strength required of fillings. Occasionally we are suddenly and painfully reminded of the crushing force that is exerted by the teeth in catching a hard and resistant particle taken into the mouth unknowingly with the food, the force of closure all being concentrated at one small point. If this point is upon the surface of the filling, and that filling is not well founded as to cavity form and marginal strength—well-supported enamel walls and correct anchorage form—the result of logical deductions of unquestioned mechanical laws, there is to be an immediate and total collapse of walls and filling.

When it was announced that the gnathodynamometer registered one hundred, two hundred and as high as two hundred and seventy pounds when tests were made with the central incisors in the stress of mastication, it began to dawn upon us that we must make decisive effort to the betterment of our work in strength and durability. And betterment has been the result, together with a generous satisfaction in advanced attainment as shown by our records. We sometimes notice that the incisors stand in an oblique direction; here again the fillings placed in these cavities will receive a greater strain through the stress of mastication than in teeth more nearly approaching what might be termed the normal position.

As to the cuspids, observation would seem to confine this form of cavity preparation to the flat incisal surface.

Convenience and thoroughness seem to go hand in hand, for it is impossible to be generally thorough without a due amount of convenience form. Other things being favorable, convenience insures a well-adapted, evenly condensed filling of the desired specific gravity; a specific gravity sufficient to prevent the spreading of the mass at certain points and to prevent the ingress of moisture, for unless the gold is given sufficient density it will absorb moisture

to the point of disintegration and its removal by the excavator is readily accomplished. Not only must there be convenience so far as entrance to the cavity is concerned, but in so far as the cavity walls bear position one to the other. Thoroughness in every direction is our manifest duty. To assume this thoroughness we must have a comprehensive appreciation of cavity points and angles, together with the placement of enamel margins that will further the foundation and give grace and beauty of outline. If there is to be grace and finish there must be what might be described as ease of outline. The lines must merge with ease of condition and of expression that offense may not be given to the esthetic eye. It must be admitted that aim should not only be made at durability, but at all times, in so far as it is permissible, we should respect and favor the artistic. If the building of a filling is commenced with the conditions here described, we may rest assured that ease and rapidity will be greatly enhanced; every step being taken with confident satisfaction that when we have finished the patient has been given the best, a creation the scrutiny of which we may willingly permit by our fellow practitioners.

At all times as much consideration to the comfort of the patient is to be given, as to the factors of convenience and thoroughness. If a cavity may be so conceived and prepared as to materially lessen the time of the sitting and withal conform to the employment of these principles, a moment's hesitancy is not to be considered; for that which we require of the patient is sufficiently exacting to demand of us in return all due avoidance of pain compatible with efficiency.

No man can do his work thoroughly unless he has the cavity in such condition that he may readily see and have a free and proper use of his instruments. For these reasons reference is made to cavity form. All will admit a body of the spherical form—a marble to be used as an illustration—is readily moved by a lesser amount of force applied in nearly all directions than if this same marble be given the cuboidal form. So it is with the form of a filling; a filling made in a cavity, its walls being rounded and of circular form, and these walls united by curves rather than by well-defined angles, never has, cannot and never will have the property of anchorage of the one with acute angles—these angles largely the result of flat walls. The placing of the filling is greatly simplified, for it is much easier to pack the filling material against flat sur-

faces than in grooves and against circular walls. The beginning of the operation loses its difficulties and perplexities, each piece of gold is obedient to the will and instruments of the operator; there is never any fear that any portion of the filling will slide or rock. In this form of cavity there is obtained security of filling and strong walls. Here again we are reminded of the conditions of convenience, these in turn meaning a saving of time, strength and energy, encouraging us to profit to the fullest extent by continued, well-sustained effort and willing obedience to discipline.

Well will we be rewarded by our efforts if they be directed along the lines of these principles and methods.

Objection might be made to this right-angle preparation on the ground of difficulty of thorough adaptation of the gold into these angles. This method, however, has been demonstrated time and time again in the monthly clinics held by the G. V. Black Dental Club, and it can be done most perfectly. A due regard for proper instrument forms and instrumentation are the essentials. If an operator who has been in the habit of preparing cavities of poorly developed angles and wrinkled walls will conscientiously try this method of flat walls, and as conscientiously make his fillings against these flat walls, he will no longer be a skeptic to the manifold advantages of the latter.

A few words as to cavity formation in detail. The greater the area of cavity surface, proportionately greater must be the resistance of the filling against the force of stress, although this area should not be carried to the extent of undermining and weakening the cavity walls. This method of cavity preparation is a scheme of right angles throughout. The gingival wall is to be flat labiolingually and mesio-distally, at right angles with the axial wall and carried well root-wise. Thus is the seat of the filling provided for. The lingual and labial walls at right angles with the axial wall, this giving the flat axial wall. In speaking of the labial wall, notice is to be made of the necessity of giving as much surface to the wall as can be, especially when the force is in an obliquely upward direction. Again it is observed that the step is to be at right angles to the cavity proper, and the angle between floor of step or pulpal wall and labial wall is to be the right angle; the length of this step mesio-distally depending somewhat upon circumstances, as exposure of dentine by wear and the lines of union of the enamel lobes, etc. Especial mention is to be made that the floor of the step

is to be perfectly flat, as this surface is none too extensive at the best, and all conditions favoring change of position of the filling under stress are to be, in each and every instance, rigidly excluded. In this is the anchorage of the filling provided for.

As to the cuspids the walls of the cavity proper at right angles and the step or right angle anchorage apply with the same force as in the incisors, provided that the cusp is entirely worn away and the incisal surface flat. It is to this condition of the absence of the cusp that this kind of cavity preparation is to be confined. Here the right angle anchorage may be employed with the full assurance that the liberal surface of the step will determine a filling of body and strength commensurate with the requirements of stress.

Certainly the age and sex of our patients must ever be considered as modifying influences in the undertaking of our operations. We are not always enabled to do as we wish in the direction of permanency. All are aware that the physical condition of some patients is not such as to warrant the pushing of the case to the ideal. Under such circumstances temporary operations may be made and the patients given to clearly understand the truth. By what we are enabled to gather from unquestioned authority in the consideration of these operations as applied to age we are led to the conclusion that the strength of the teeth will always admit of the operation of permanency; but here again necessity compels an operation of a temporary character. It is recognized that the courage and will in these younger patients are not enough and cannot at all times be relied upon to carry them through.

The operator must always maintain judgment as to when he can and cannot give expression to ideals. The statement is made that fillings do stand five, ten or twelve years without aid of the methods under consideration. This calls for no argument, cases coming under everybody's observation now and then verifying the statement. But the fact must not be lost sight of for an instant that conclusions taken from experience—one of the best of teachers—show these methods pushed to their finality have never and cannot admit of logical, therefore effective, negative argument.

Another phase not to be lost sight of is the exhibition of the esthetic to the last degree possible. If these operations are carried out understandingly and faithfully esthetic conditions are favored. There are those who lean heavily in the direction of the pillar of estheticism. To this they are attracted as by a magnet; it possesses

a power of fascination overwhelming. One man in his operation will fail to restore the full contour mesio-distally by a half inch, more or less. It is known without looking at him that he leans to this pillar. Another calmly proceeds to build his filling into the incisal angle entirely unsupported by dentine, the enamel surface of the angle holding out to the gaze a large check. It is decorative, you know. This pillar has him. Another operator makes a labial filling in the gingival region, leaving the cavity margins of uncertain direction, with ears at either end to serve as handles whereby he may secure another grip later on. Still another so prepares his enamel margins that they are filled with angles. And another will build his filling, taking pains to polish the surfaces as a mirror, leaving accumulations of calcareous deposits about the teeth. What kind of estheticism is this?

It is being constantly demonstrated that change of environment is clearly of benefit in a variety of diseases. A simple change of surroundings has wrought cures seemingly bordering on the miraculous. Mental conditions are many times amenable to associate influences. They clarify the vision and add zest and energy, permitting a healthy swing of thought in harmony with natural laws, bringing light and order out of darkness and dispelling perversion of mind. To the mentality things partake of a different meaning, evidence accumulates of vagaries of the past, until suddenly the conviction comes with overwhelming force that the viewpoint was not well taken. Mental strabismus is another form of trouble a person occasionally meets with; but we have a doctor in the G. V. Black Dental Club who makes all things straight. He also deals energetically with rabies; and while his treatment in the beginning sometimes makes worse, a little later the paroxysms become less severe and ultimate recovery is assured.

Every art is possessed of its distinctive discipline, has its own methods of training and secrets of experience and skill, and it is the aim of all of ambition to obtain these secrets, which they may to a greater or less extent if they will but submit to this discipline of vigorous methods of training. One in early life may be in the possession of gifts showing a skill approaching the marvelous, antedating all systematic training, but the cultivation of this natural aptitude is later realized in mature performance, because thorough training steadied, supplemented and developed it. A man of enthusiasm and of this natural aptitude to whom has not been revealed

the secrets of his art, through lack of training in methods, seldom if ever develops the finished product of the one who in his work has been trained and steadied and disciplined, resulting in a creation appealing and artistic. This creation we realize is not the result of careless and immature provision, but of an educational process more or less severe and prolonged. Between the untrained and the artist the way is long and oftentimes perplexing, and many obstacles are to be encountered, some of which we at first fail to remove, but we are to remember and discipline ourselves and with a firm resolve go forward until the mastery is ours. Mastery is dependent on the practice of these methods—submission to discipline, possession of the results of experience and command of skill. It is the result of obedience, service and knowledge. Sound education, which, as a matter of fact, is as individual as temperament and gift, is not developed along well-defined academic methods, but through training which qualifies preëminently for a specific kind of work. The master of his art is self-educated, and he conceives, puts into being, develops and perfects the creations of his genius along lines determinately specific. The methods which favor him materially, most efficiently to master the difficulties of his art and to command its secrets of skill he has recognized and utilized. Deep and great productive power never comes to man by accident, but is inborn, the priceless gift of nature; and though the capacity for developing such power is given by nature's laws, its unfolding depends in largest measure on the following two conditions—skill and character. He must possess himself of many kinds of dexterity and carefully cultivate and bring to fruition his nature-self.

The widest latitude in the selection of educational material and methods is appreciated, and he who so takes, uses and profits attains the mastery. Mastery never comes by nature or by chance, but is the result of self-culture long and intelligently sustained and followed. It comes after obedience, service and knowledge. The more stern and long-sustained the training the greater the achievement. The artisan may be sincere, diligent and fairly skillful, but he is conventional and devoid of creative power, is not possessed of self, of individuality sufficient to create what is called a sound or self education. There is a veritable separation of the artist and the artisan, the difference being describable in the free law, the constructiveness, and, as mentioned, the individualism of the artist. He grasps the higher possibilities of the material which he com-

mands; and the tools which he employs, to them he gives the most delicate uses. To sum up, the artist is creative, the artisan imitative.

Experience is indeed the best of teachers, but frequently we fail to learn the most important lessons she inculcates. The process of evolution, as we perceive it, is of time and of long duration. The grand scheme of change and progress is not realized, accepted and obtained in a moment. The principles we are holding are of vital importance, pregnant with possibilities of far-reaching results. Our profession has reached a phase in its growth when we instinctively feel we are on the threshold of a new life. The older order of things is passing, signs of newer, brighter, better conditions are crowding upon us demanding our best attention and effort. An upward step, stronger, therefore better, has been taken. Can it be possible that there are those who will argue for a return to the lesser?

THE MANAGEMENT OF THE TEETH UP TO THE EIGHTEENTH YEAR IN MOUTHS VERY SUSCEPTIBLE TO DECAY.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

The subject assigned me for this occasion embodies one of the most important problems in the entire field of operative dentistry. If we can successfully combat dental caries in the mouths of our patients till the eighteenth year we have carried the patient over that period which experience proves to be the most susceptible of any through life. In other words, as has often been stated, decay of the teeth is essentially a disease of youth, and if we control it during youth we can ordinarily control it permanently. Of course, there are exceptions to every rule, and there are contingencies which may modify the behavior of any given case, but a close study of the history of teeth will reveal the fact that if decay be kept in abeyance till the eighteenth year a practical immunity ordinarily supervenes, and the case from that time forward is easily managed. Lest there be a misapprehension of this statement I wish to illustrate the exceptions just referred to. We do occasionally find individuals—though they are exceedingly rare—in whose mouths the

*Read at the annual clinic of the G. V. Black Dental Club, St. Paul, February, 1902.

tendency to caries seems to be continuously persistent, cases in which the teeth almost literally melt away, and where the effort to save them by filling appears well-nigh fruitless. Cases like this do not present in an ordinary practice very often in an entire lifetime of experience, and yet to listen to reports of cases by practitioners it would seem that they were tolerably frequent. The mistake is often made of judging a case which is exceedingly susceptible and in which caries is progressing with alarming rapidity as a case of continued persistence. The fact is that many of these most unpromising cases may be controlled and immunity established by proper treatment. But the term immunity must not be misunderstood. It does not imply that in a given case, at a given period, the teeth of the individual suddenly change in their tendency to decay to the extent that there never will be any more cavities or any necessity for further attention to the teeth. It is true that in some instances the change from susceptibility to immunity seems to come so abruptly and effectually and to remain so permanently as to give rise to this impression, but with most cases a continued supervision of the teeth at stated intervals will be found necessary, when in a given mouth decay has once prominently manifested itself.

There are many contingencies which may result in a recurrence of susceptibility where immunity has apparently been established, and also to lead to the formation of occasional cavities and the failure of fillings even where the tendency to decay seems to have abated. But this should not be allowed to obscure our vision of the fundamental fact of susceptibility and immunity, nor to the correlated fact that susceptibility is most prominent in youth.

If it be true, then, that decay usually manifests itself most actively before the eighteenth year, it becomes a matter of the greatest importance that we pay particular attention to it during this period, and it has been assigned to me by your committee to endeavor to point out some of the means to be employed in managing these cases.

There are two features of this question which the conscientious operator cannot escape—the management of the patient and the management of the teeth. That the temperament of the patient does not always fit into the requirements of the case must be apparent to every operator of experience, and it is as great a duty and

as high an accomplishment to learn to control the patient as it is to fill the teeth properly.

It is frequently found that in cases of active susceptibility we have also presented patients of an extremely nervous temperament with teeth exceedingly sensitive, and in these instances it becomes very important to make a close study of the individual in order to develop as best we may a certain degree of stamina on his part and avoid at all times the danger of undermining his nervous system or his courage.

It is quite out of the question to take up in the present paper a detailed consideration of the subject of temperament as it relates to the control of patients, and yet at all stages of the management of these cases this subject must be more or less prominent and must influence in many respects the character of our operative procedures during the years indicated.

Extreme susceptibility is frequently manifested in the individual through the behavior of the deciduous teeth, and where these are found to be badly decayed the patient should be kept under the closest surveillance from the time the permanent teeth begin to erupt—to say nothing of the necessary attention to the deciduous teeth by way of keeping them comfortable for mastication. The establishment of good habits of mastication is exceedingly important in relation to controlling decay early in life, and habits good or bad are frequently formed as the result of the condition of the deciduous set.

When the first permanent molars begin to erupt—particularly the lower ones—it will be found an excellent precaution to protect the fissures in the occlusal surface before they have time to decay. This can be done immediately on the exposure of this surface through the gum by cleansing the surface with absolute alcohol, and after thorough drying to force some cement well down into the fissures, allowing it to extend over the entire concavity of the occlusal surface. This will adequately protect the surface till the tooth has grown sufficiently long to reach full occlusion with the tooth of the opposite jaw, when the friction of mastication will largely minimize the danger of decay.

In susceptible cases the teeth from this time forward require the very closest supervision. The patient should be instructed to report for examination at least every three months, and in extreme cases oftener. As to the character of the operations and the kind

of filling material to be used, the best judgment of the operator should be exercised from an individual study of the case. It has long been a firm conviction of the essayist that there was no one filling material so reliable for saving the teeth as gold, and he has never yet seen anything to controvert this opinion. But in order to successfully employ gold it becomes necessary to have such a control over conditions and to be given such a free rein in regard to mechanical perfection that in a child of tender age the indications are usually against its use. Let me make myself clear in relation to this question. I am not opposed to gold in the teeth of children on account of any inherent defect in the material itself, nor because the teeth at that age are not sufficiently dense to take gold fillings, but because the exactions necessary for the successful use of gold are such that few children will be found with sufficient stamina to have gold fillings properly inserted. The quite common failure of gold fillings in the mouths of children may in many instances be traced to the fact that the manipulative requirements for the proper insertion of gold have not been fully carried out on account of the intuitive feeling in the mind of the operator that in working for a child there is constant danger of overtaxing the patient by an operation which is too exacting. Any letting down of a high standard of manipulation in the use of gold is invariably prolific of failure, and in those cases where the operator is not certain that he can so control the conditions as to be permitted the greatest freedom in securing mechanical perfection, he would better select some other filling material.

When your essayist had reached this stage in the writing of the present paper he received a reminder from the chairman of the program committee that the title of his paper was to be "The management of cases of extreme susceptibility to decay for patients between twelve and eighteen years of age." It will therefore be seen that some of the considerations embodied in the early part of the paper are outside the subject assigned to him, and for this divergence he apologizes to the program committee. It was his own oversight that he selected the wrong title, and yet he deems the points already touched upon to be of sufficient importance and to be so closely related to the subject proper that he ventures to let the paper stand as written.

The care of the teeth between the ages of twelve and eighteen is usually a simpler problem than before the age of twelve, in

view of the fact that in ordinary circumstances the patient is more easily controlled, but in cases of extreme susceptibility, such as those under consideration, it is at best no easy task. It is primarily a question of constant watching and early checking of the disease the moment it shows itself at any point. It is not so much the insertion of permanent fillings at this age as it is the prompt suppression of decay. In very susceptible mouths the frequency with which cavities show themselves would usually render it too great a tax on the patient to attempt a heroic and permanent operation in each cavity. No one deplores the necessity for doing temporary work more than the essayist. It is to him a source of especial regret to be obliged to do work over and over again. It seems a terrible lowering of our professional ideals, and if carried to an extreme it assuredly becomes debasing. And yet, after a somewhat extended study of the effect of dental operations upon our patients, there is one thing the essayist dreads more even than the renewal of a filling, and that is the breaking down of a patient's courage. From the age of twelve to eighteen there are likely to arise in the development of the child contingencies which loudly argue against protracted sittings or extreme pain, and these contingencies must not be ignored.

But the necessity for temporary fillings must never be permitted to lead the operator into slipshod methods. Just so soon as the conditions are favorable for the performance of permanent operations they should be undertaken.

It ought to be stated in passing that the term "permanent operations" must be taken in a relative sense and merely to mean that a certain class of operations performed in a certain way with certain filling materials are much more permanent than certain other operations, and that they constitute an almost entirely different line of practice. It is not meant that an operator can place his finger on a given filling in one of these susceptible mouths and say that that filling will last indefinitely.

It may be well to consider now the character of work that shall be done as temporary in these mouths, and that which we wish to make as permanent as possible. For the most part reliance must be had upon oxyphosphate of zinc or oxyphosphate of copper and gutta-percha for temporary work. In all occlusal cavities subject to the attrition of mastication the cements are more effective than gutta-percha, while the latter seems to last better in simple proximal

cavities or those reaching under the free margin of the gum along any surface. The claim is frequently made by observant men that cement does not oftener fail in the gingival region than at any other point, provided care is taken to protect it against moisture till crystallization has occurred, but the fact remains that in many of these cases with the limitations under which we are sometimes obliged to operate in the mouths of children the cements do fail at this point far in advance of any appreciable injury to the rest of the filling. This has been observed so frequently that it would seem only common caution to urge the use of gutta-percha in this region wherever it can be successfully retained. There is one point, however, which cannot be ignored, that gutta-percha must have for its retention a cavity of appreciable depth, so that it may be retained mechanically, while cement is so adherent to the tooth tissue that it may be made to do duty in very shallow cavities which extend over large areas of the tooth surface. This is sometimes a great advantage in these susceptible cases, where the cavities spread rapidly and are too sensitive to admit of much cutting for retention.

In proximo-occlusal cavities where the element of attrition becomes important and where the proximity to the gum in the gingival part of the cavity is a menace to cement, the most effective plan is to employ a combination of the two materials in the one cavity, using gutta-percha in the gingival third and cement to complete the filling. If the gingival margin be thus protected with gutta-percha assurance is had that this part of the cavity is safe till the cement so wears away that a new filling is indicated.

When the teeth have thus been tided over the first rapid stages of caries and the disease checked immediately on its appearance in every possible case, so as thereby to keep the carious process from spreading to other teeth, and when the patient approaches an age where better control is to be had, then the aim should be to study means for performing operations of a more permanent character. It is to the study of this phase of the subject that I now invite your most careful attention. As I look back over our work in the past I fear we have been ignoring a very effective and useful means for meeting these cases. Amalgam has too often played us false, and while there are many cases in which it is clearly indicated on account of financial reasons—reasons which we would gladly ignore in our society deliberations, but which cannot possibly be ignored in practice—yet there are few of us who would not willingly adopt

some other means if placed within our reach. Amalgam has been widely useful for a certain kind of service in saving teeth, but if the percent of failures with this material were measured up against its successes the result would not appear flattering to its reliability.

As has already been intimated, the insertion of large gold foil fillings is frequently contraindicated in these cases on account of the nervous tax on the patient. Gold is exceedingly exacting in its requirements and will not tolerate any laxity of method on the part of the operator. This is especially true in cavities of a size to which many of these must be cut, for at this point I beg to lay down an axiom which to my mind admits of no controversy. Whatever may be said pro or con regarding the practice of "extension for prevention" in our routine work, the fact stands out as positively irrefutable that in cases of extreme susceptibility, such as we are now considering, it is the only sheet anchor upon which we may rely for anything like permanent work. A vulnerable area left around a filling on a surface peculiarly subject to decay means a decayed area in a few months. If this be not true, then the observations of some of the most observing men must go for naught.

How, then, shall the issue be met? I confess that in the past this has been to me a perplexing problem. Recognizing the necessity for broad cutting to reach lines of safety, with its concomitant pain and the consequent length of operation required for the proper insertion and finish of the filling, I have sometimes been tossed on the two horns of a dilemma which has left me in indecision and frequently in despair. Under such conditions I have all too often found myself on the side of compromise, and every time that I have done so I have been haunted by the specter of a subsequent failure.

How shall we combine the practice of wide cutting, with the avoidance of overtaxing our patient? I believe this condition can better be met by the judicious use of inlays than by any other means at our present disposal, and when I thus argue in favor of inlays in these cases I am not unmindful of the limitations which exist in this class of work. I have said as much as any by way of caution against what I considered to be an indiscriminate use of inlays, and I still believe that much injudicious work is being done in this line. But the more we perfect the process the wider seems to grow the scope of usefulness, and the cases under present consideration offer one of the most inviting fields for its employment.

The chief recommendations which inlays possess for these cases lie in the lessened tax on the patient and the greater freedom of extension which may be practiced without adding materially to the pain or complication of the operation. This statement may seem paradoxical, but in inlay work the plan of anchorage is different from that in ordinary filling and the cutting of the cavity proceeds along different lines. The orifice to the cavity must be wider than the interior and there is no need for sharp angles or grooves in the dentine for retention. The mere extension of cavity margins is ordinarily not a painful operation and can be done with chisels, stones and disks. It is the cutting of angles or grooves in the deeper parts of the cavity which causes the major amount of pain in preparing cavities for foil fillings, and this is to a large degree avoided with inlay work. Then again, for the making of inlays the tendency and the temptation will always be found in the direction of a wider and still wider extension of the marginal outlines, while in foil fillings the temptation is all the other way. Aside from the necessity of a broad opening to the cavity for inlays, it is a commonly observed fact that a large inlay is more easily made than a small one, while with a foil filling every extra cut of the bur or excavator means a relative extra blow of the mallet in replacing the tissue with the foil. There is no prolonged tension on the patient in inlay work as there is in malleting a large filling, and this greatly lessens the dread of dental operations among these young patients.

That inlays have their limitations I still contend, and yet for certain lines of work they prove a most useful adjunct to our other methods of saving the natural teeth.

In conclusion I wish to say that inlay work demands peculiar knowledge and peculiar manipulative procedure, and most of us who have all our professional lives been accustomed to preparing cavities and inserting foil fillings in the ordinary way will blunder much at first when we essay inlay work. It requires the closest attention to details and the most painstaking care, and even then the results are not always ideal. Neither are they, for that matter, with our fillings, but fillings have had a longer test than inlays and we know more about the nature of their failures than is possible at present with inlays.

One thing I cannot refrain from predicting—that much of the porcelain inlay work now being inserted in molars and bicuspid

where it is subjected to the stress of mastication will prove a disappointment. The margins of porcelain are too friable to withstand the usage which such a service imposes upon them and sooner or later they must fail. When I advocate inlays for these young patients I advocate gold inlays in all cavities not exposed to view.

THE NECESSITY FOR OCCLUSAL ANCHORAGES FOR FILLINGS PLACED IN THE MESIO OR DISTO- OCCLUSAL SURFACES OF BICUSPIDS AND MOLARS.*

By W. H. K. MOYER, D. D. S., LITTLE FALLS, MINN.

For so-called proximo-occlusal fillings in bicuspid and molars, where the material to be used depends on the shape of the cavity for support, there are but two general methods of anchoring—one being by means of pits or grooves in the lingual and buccal walls, the other being by means of a step cut in the occlusal surface at right angles to the main wall of the cavity. In comparing these methods we must consider the advantages and disadvantages of each, taking into careful consideration the tests which such fillings must withstand.

The adult human can exert a crushing force of from 100 to 300 pounds on the posterior teeth. This is measured by means of a machine known as a gnathodynamometer.

The machine gripped in an ordinarily strong hand can be made to register barely 50 pounds, so we get some idea of the pressure exerted on the teeth. This force, by the intervention of some hard substance such as a shot or piece of bone in the food, may be brought almost entirely upon one filling, therefore is an accurate gauge of the amount of stress which a filling must be able to withstand.

In the drawings before you sections of teeth with samples of fillings anchored by these different methods are shown, also the direction of the line of force which is most apt to dislodge them.

In Fig. 1 is a representation of what I shall term lateral anchorage. The grooves are started at the linguo-gingivo-axial and bucco-gingivo-axial angles and extend occlusally to the dento-

*Read at the annual clinic of the G. V. Black Dental Club, February 20, 1902.

enamel junction, or, roughly speaking, two-thirds of the entire depth of the cavity. Beyond this point we would be depending for support on enamel, a substance unworthy of consideration for anchorage purposes.

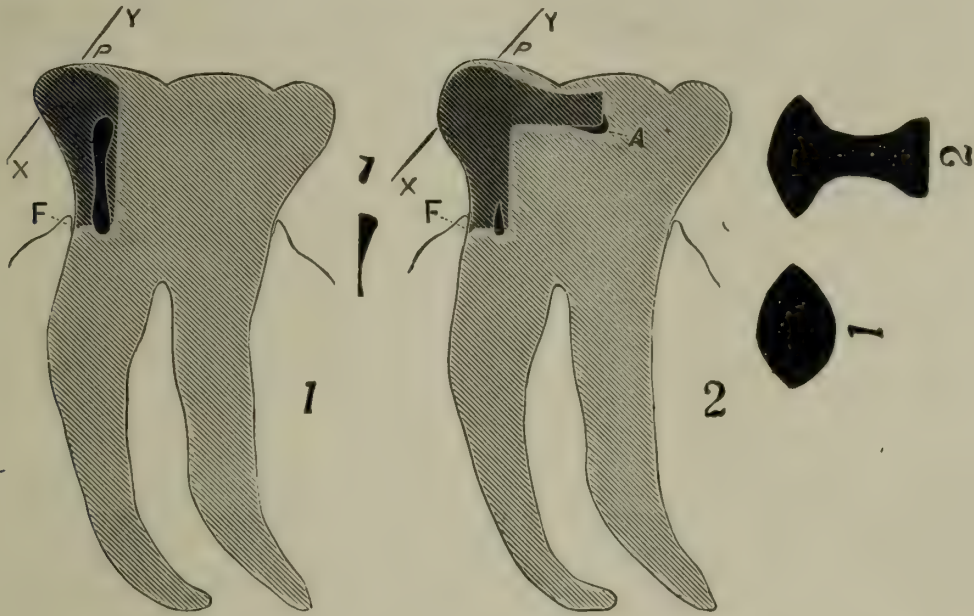


Fig. 2 represents an occlusal anchorage. Two slight grooves at the linguo-gingivo-axial and bucco-gingivo-axial angles extending very slightly toward the occlusal, then a right angle step at the occlusal running back into the middle third of the occlusal surface and slightly dovetailed in form.

This occlusal step is cut just through the enamel, so that the filling rests on the resilient dentine and is secured by slight grooves in the dentine at point (a).

The preparation of the two cavities, aside from the anchorage, is supposed to be identical. With the lateral anchorage what have we done to the tooth?

We have weakened it at a vital point where our fillings are prone to fail. We have cut nearly if not quite through the dentine of the lateral walls, leaving little but friable enamel for support, and at the occlusal third have no anchorage at all. With the occlusal anchorage we have weakened the tooth at no essential point—in fact, have strengthened it by cutting out and filling the fissure, which in a large proportion of cases is a danger point.

The filling is anchored entirely in dentine and rests securely on two flat seats of dentine, so that the slightest anchorage suffices. By means of the step anchorage and dovetail it is so secured that

to move it a fracture of an entire lingual or buccal cusp is necessary.

Let us examine the strain the anchorage points are subjected to by using different lines of force.

A force exerted at right angles to the occlusal surface at this point forces each filling against the seat, therefore is in no way dangerous. But as we incline the line of force in Fig. 1 the tendency is to push the filling away from the cavity walls, with nothing but the lateral anchorage to hold it in place, so the strength of the lateral walls or of the filling material in the anchorage grooves is a gauge of the amount of stress the filling can withstand.

In Fig. 2 the filling is forced more tightly against the floor of the step of dentine and cannot be moved except by a fracture of the filling at the angle of the step.

When the force is exerted at P at right angles neither filling is endangered, but if inclined a few degrees the tendency in both cases is to tip the filling out of the cavity.

In Fig. 1 the strain comes directly on the lingual and buccal walls at the point where we have previously weakened them and frequently results in a fracture of one or both. In Fig. 2 the strain comes on the whole pillars of the cusps, the strongest parts of the teeth, for to move the filling in the step it must bear directly against these cusps.

Another comparison which brings into consideration one of the most powerful factors known in mechanics. That is the lever.

The law of levers, which you are all familiar with, is:

The power is to the weight as the power arm is to the weight arm. This means that the power multiplied by the length of the power arm is equal to the weight multiplied by the length of weight arm.

The fulcrum is the stationary or supported point of the lever.

In each of the illustrations a force exerted at point (P) at this angle would tend to tip the filling out of the cavity with the cavo-enamel margin at F as the point of least movement. It would convert the fillings into levers with point F as the fulcrum. The weight to be moved would be the amount of resistance the anchorage points would offer, (W). The power arm would be the distance from F to P, which is the same in both cases (six inches in enlarged drawing).

The distance from F to the anchorage points would represent

the weight arm. In Fig. 1, measuring from F to the highest point of the anchorage possible in the dentine (and this is assuming that all the anchorage strength is at that point), we find the distance to be in this case, four inches.

In Fig. 2, by describing an arc with F as a center from point P, we find that the weight arm is the same length as the power arm.

We will assume that there is an occlusal force of 200 pounds exerted at P along this line of force. In Fig. 1 we have this example:

The weight or resistance is the unknown quantity or (X).

Fig. 1—(X) times 4 = 200×6 .

$$4X = 1200.$$

$$X = 300 \text{ pounds.}$$

Fig. 2—X times 6 = 200×6 .

$$6X = 1200.$$

$$X = 200 \text{ pounds.}$$

This means that a force of 200 pounds in Fig. 1 would exert a strain on the anchorage grooves of 300 pounds, while in Fig. 2 the same force in the same place on the filling would exert a force of only 200 pounds on the anchorage, or two-thirds as much as in Fig. 1, so that if we grant an equal strength for both methods of anchoring we still find the evidence in favor of the occlusal one. It also shows that in those cases where the dentine which would naturally form the angle of the step is gone we are still justified in placing our anchorage occlusally instead of grooving the lateral walls. The further away from the main cavity we run the step the greater becomes our leverage, so that in cases which show evidences of strong occlusal force we can, by increasing the length of our occlusal step, guard against this force by strengthening our anchorage, while with a lateral anchorage we could do nothing but enlarge the grooves, and would only succeed in still further weakening the lateral walls.

It may be asked at this point whether in actual practice we ever have fillings moved by this occlusal force.

For answer take the mouth of any patient who does an average amount of heavy biting and with a fine exploring point and magnifying glass carefully examine all proximo-occlusal fillings that are subjected to stress from an occluding tooth.

You will find that it is not an unusual occurrence for one mouth to contain several fillings anchored in the lateral walls that have

been moved enough to allow of leakage or even the admission of the fine exploring point. If decay has not taken place under such a filling it is only a question of time until it will, provided the patient has not reached a condition of immunity.

There are comparatively few occlusally anchored fillings that come to me for inspection, so perhaps my evidence is of little worth; but I have yet to see a filling so anchored that has failed for lack of support. They may fail for a variety of other reasons, but they do not move away from the cavity walls.

Just a mention of what might be termed collateral advantages for the occlusal step. In all classes of filling ready access to the cavity for purposes of light, vision and instrumentation is desirable, and it is found that in distal cavities the cutting of an occlusal step is of great assistance. It so opens the cavity to vision and instruments that it is unnecessary to use hooked or sharply curved excavators to remove the decayed dentine; thus it not only expedites and simplifies the operation, but assists us in being thorough.

The complete removal of the decayed dentine being one of the essentials of success, a method that simplifies and insures this is advantageous. When the preparation of the cavity is finished we find it a much simpler task to pack the filling material, especially if it be gold, as our instruments easily reach every part of the cavity and we can see what we are doing.

The genial philosopher, Elbert Hubbard, has given voice to a rule for right living which seems unusually well fitted for the needs of dentists.

It is: "Do your work well and be kind." It seems an excellent rule, but in following it we must analyze the "be kind" and be guided by its true meaning.

Is shrinking from causing a little pain and sacrificing a little tooth structure and anchoring our fillings so that they may be moved by the force of mastication being truly kind? Would such an excuse be acceptable from surgeons who work on other parts of the anatomy?

Being kind means being thorough in our operations, doing the best we know how, using the best methods to make our operations as stable—as lasting—as possible. *The step anchorage is one of these best methods.*

Let us as dentists of the Northwest make for it a reputation of containing more workers who are thorough, more operators who

follow the best proved methods, than any other section of the world. In the progress of our profession let us be leaders, by reason of our determination to do our part of the world's work to the best of our knowledge.

Let us be kind by doing our work well.

THE VALUE OF DEFINITE METHODS IN TREATING DISEASED PULPS:*

BY A. C. SEARL, D. D. S., OF OWATONNA, MINN.

There is probably no subject in dentistry that has received more attention from dental journals than has the treatment of the teeth in its various phases, from the mumifying of dead and decayed pulps to the new and radical chemico-metallic methods of Dr. Weld and others.

Up to the present time there has been no universal method adopted. It is supposed that every man has "a reason for the faith that is in him" and can explain and defend his own method for treating that infinitesimal cavity that plays so important a part in the comfort of the teeth. It is not my purpose to criticise the methods adopted by others, but to give you what I consider a rational treatment of root canals. It is unnecessary for me to call attention to the care of teeth whose pulps have been purposely destroyed, for I think it is generally understood that such teeth need no treatment.

In all our operations on the teeth, absolute cleanliness and aseptic methods should be employed. I have no sympathy for the operator nor confidence in a method, which does not require the use of the rubber dam for treatment. Whatever the treatment is, it must be thorough in every detail, in cleaning, drying and filling.

Take, if you please, a typical case, a patient consults me and complains of pain in the lower first permanent molar, says it is sore to the touch of the tongue, and seems longer than the other teeth; did not sleep much the night before. The patient is seated in the chair and teeth, gums and occlusion examined, there is no swelling and the teeth are all in position. In the affected tooth is found a large mesio-occlusal amalgam filling, which has been in place for several years. I will wash the tooth and adjoining ones with an

*Read before the G. V. Black Dental Club.

antiseptic solution, and will adjust the rubber dam on the cuspid, first and second bicuspid, and first and second molars and secure with a clamp. (I extend it to the second molar on account of the soreness in the first molar.) I now wash teeth and dam with an antiseptic and dry carefully. With an aseptic spear point drill or fissure bur in dental engine, I remove the filling, and with a No. 5 aseptic bur make a free opening into the pulp chamber. I now flood the pulp chamber with aromatic sulphuric acid without any attempt to enter the pulp canals. Next comes a thorough washing with hot water, as hot as can be used comfortably, and with a little absorbent cotton or bibulous paper, the pulp chamber is dried out, and as much of the putrescent contents of the chamber and larger portions of the pulp canals removed without causing disturbance at the apical foramen. The pulp chamber and canals are now flooded with white oil of cloves, a pledget of cotton placed in the pulp chamber, and another pledget of cotton, used to absorb the surplus oil. The walls of the cavity of decay are then moistened with oil of eucalyptus and filled with pink gutta-percha, hermetically sealed. This I consider one of the most essential things in the treatment of teeth. I think the time has passed when these teeth should be filled with cotton and sandarac; it is uncleanly and owing to decomposition is not positive and makes the mouth offensive. The old method of puncturing the filling for the purpose of allowing the gas to escape is fast becoming obsolete, for if asepsis is what we are seeking, surely from the same territory from which gas can form and escape, microorganisms can invade.

Our patient having been made comfortable is discharged until the next day, when we wash the teeth and apply the rubber dam as before and wash the teeth and dam with an antiseptic, in fact have everything as near perfect asepsis as possible. Remove the temporary filling and cotton and secure free access to the canals, even at the expense of good tooth structure. (Manipulative ability is always impaired by obstructions of light or approach.) I flood the chamber and canals with the acid. The action of sulphuric acid on dentine is self-limiting, or at least so nearly so as to make its use perfectly safe. It is a pronounced germicide and acts with greater vigor on diseased tissue than on healthy tissue, and does much to assist in opening the pulp canals. With a No. 5 Donaldson broach, I proceed to coax from the root canals all putrescent and foreign matter, without using much force, and

none toward the apex of the root. With a little coaxing one can get the canals clean. One of the factors often overlooked, which proves the very foundation of successful root treatment, is the manner in which the mechanical cleansing of the canal is carried on. The operator who, equipped with the proper instrument, possessing sufficient patience, skill and delicacy of manipulation to clear out the contents of the canal, instead of forcing them further in, will not have an undue number of failures to complain of. It is also equally true that an operator whose clumsy instruments and unskilled fingers clean the canals only by forcing its contents through the apical foramen will have one failure after another, and while the successful operator now attributes much of his success to the antiseptic used, the unsuccessful one attributes still more his failures to the same cause. Having neutralized the acid with a solution of bicarbonate of soda, dry the tooth and canals thoroughly. Now flood the canals with Dr. Black's 1, 2, 3 and fill each with a single wisp of cotton, and the cavity of approach with pink gutta-percha, or temporary stopping. Be sure that it is sealed and discharge the patient for a week or ten days. If on return the canal dressings are dry and sweet, the roots and teeth may be filled.

In conclusion I believe the cavity of approach should be thoroughly sealed after each treatment. Second, I believe in thorough cleanliness and perfect antiseptic methods. Third, for our success I believe much depends on the mechanical manipulation in cleansing the canals, but no attempt should be made to thoroughly cleanse the canals at the first sitting. I believe in praising the bridge that carries one safely over. Therefore, I offer these methods in the present paper, not that they contain any originality, but that they have proved highly satisfactory in my practice.

AN ANSWER TO THE EXTENSION FOR PREVENTION DEBATE.*

(See *Items of Interest* for May, 1901.)

BY DR. E. K. WEDELSTAEDT, OF ST. PAUL, MINN.

In the *Items of Interest* for May, 1901, is an essay by Dr. Ottolengui on "Extension for Prevention." Dr. Ottolengui's essay is discussed by Drs. Black, Johnson, Smith, Darby, Perry, Trueman

*Read at the annual clinic G. V. Black Dental Club of St. Paul.

and others. There is so much misconstruction of the teachings of Dr. Black and of the principles which I have taught for almost seven years, that I feel that now is the time to call your attention to some of these misrepresentations of our teachings. On page 358 of the journal just mentioned Dr. Smith says: "I see those fillings thirty, forty and fifty years old. I know what they look like and what they have been doing for all that time, and I cannot say that any man would be less than a vandal who displaced them and attempted to replace them on any so-called new scientific lines." In answer to this statement permit me to say that nobody has ever advanced the idea that fillings which were saving the teeth and the health of the contiguous parts should ever be removed. Many practitioners (and I among the number) allow some fillings to remain in the teeth which are not the prettiest things in the world, but which are preserving the teeth. Dr. Black has never taught any such methods, nor have I, nor have I ever heard of things of this kind being done. Surely no words are severe enough to use in condemning any man who would be guilty of removing fillings which are preserving the teeth and the interproximal space. Where fillings are not doing this, and where an improvement in the conditions can be made by making better fillings, a man is culpable and negligent if he does not make the alteration.

On page 359, last paragraph, second line, Dr. Smith says: "Would it not simplify matters to return to first principles and recall one of the well-known axioms of surgery, that sound tissue must not be sacrificed without great necessity?" And again on page 360, second paragraph, second line, "Every cavity should be cut until we get solid structure upon which to build. Failure may result and does sometimes result. * * * If that should occur to us, we can fill the tooth again." In answer to the first part of what I have quoted let me say, that extension of cavities for the purpose of giving a filling greater stability is often very necessary, and when this is the case it is always a most excellent plan to follow. In answer to the second part I will say that the subject is too broad to be answered in a few words. I shall, therefore, merely dwell on a principle to which I have called your attention in the past. For patients between sixteen and forty-five years of age who are in good health and for whom we are striving to make (and can make) permanent operations, the areas of liability to decay should be included within the cavity margin; anybody who, under

the conditions just mentioned, fails to include these territories within the cavity margins can later on expect failure. Look at these illustrations, they are pictures of some teeth in my collection. The men who made those gold, amalgam and that combination gold and amalgam filling, cut to "solid structures," but in the main they did not include the areas of liability within the cavity margins. What is the result? The illustrations tell their own story. Do not stop cutting at "solid structures" or at "sound tissue" unless by doing so you include those portions of the tooth likely to decay later. You have the reason for this before you.

One thing more needs attention. On page 359, second paragraph, second line, Dr. Smith says: "Dr. Black has stated, and I use this as an instance of a mistake, that noncohesive gold is not serviceable for fillings on the occlusal surface." I wish Dr. Smith would take the September, 1895, *Cosmos*, page 752, and read again



the first and second paragraphs on that page. I am very certain that after doing this he will be the first to correct his published assertions which do an injustice to Dr. Black and his teachings and which have made a wrong impression on the minds of those who are not familiar with Dr. Black's conclusions.

Dr. Trueman, of Philadelphia, opens his remarks by asking, "Why fillings fail." In answer let me say that the cause for the failure of all metal fillings has only to be sought; it can always be found.

In several places throughout Dr. Trueman's essay the word "Insist" is quoted, and the good doctor leaves the impression that the followers of the later day teachings have not at heart the salvation of the human teeth, but rather the making of large fillings, irrespective of class, condition or circumstance. This is a mistake, and a little later in this essay something will be said about it. I beg to

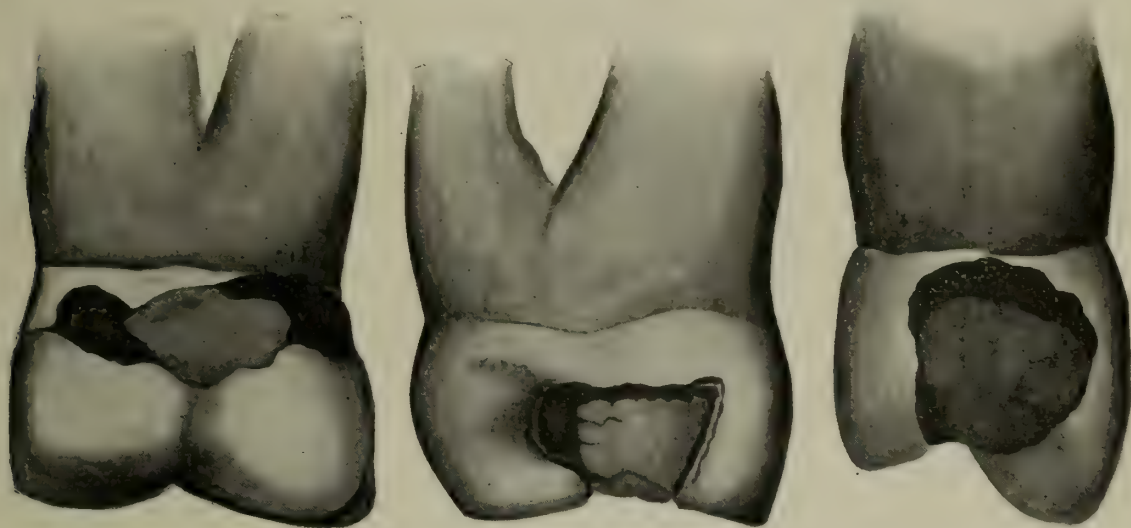
assure him here, however, that we do not "insist" on anybody doing anything which he would not wish done to and for himself. I have a great desire to take this essay of his and call your attention to a number of errors of judgment that have crept in, but shall content myself by asking your consideration of part of the last paragraph on page 371. He says: "The advocates of extension for prevention take these small approximal cavities that respond so kindly to simpler fillings, break through the occlusal surface and include in the filling the entire area of the proximal surface without regard to its condition, and still farther sacrifice sound tooth tissue to secure anchorage which so extensive a filling imperatively requires. They insist that the necessities of the case invariably demand this, the more zealous treating with scant courtesy the opinions and the experiences of those who differ." I do not like such statements, for they misrepresent the case. I can differ with teachers regarding



methods, but I could not place my name to an essay or letter which contained anything so absolutely contrary to the facts. Nobody has ever advanced the idea that the entire proximal surface should be removed when cavities were prepared in that surface. Referring back to the December, 1897, *Cosmos*, page 988, I find I wrote as follows: "In preparing proximal cavities in cuspids, bicuspid and molars, the two-thirds rule as to width of the cavity, linguo-buccally has been adopted." You will observe that I do not even suggest that anybody follow my example. Now I read that essay to the members of the G. V. Black Dental Club in July, 1897, and ever since that time cavities in the proximal surfaces of teeth which are normally situated, have very generally been prepared along those lines. I do not mean by this that a patient sixty-

five years of age who has a cavity in the gingival third receives a cavity preparation of that kind. Some judgment is used in making dental operations and in the application of the rule. I have at this time, however, no hesitation in saying that if every practitioner would prepare cavities in the proximal surfaces according to that rule tens of thousands of teeth would have to be filled but once. Beyond this I do not care to say more at this time

On page 342 Dr. Darby, in speaking of the gingival cavity margins says that Dr. Black has stated that these should be placed "always above the gum." Dr. Black never used those words. Dr. Black has always stated that the gingival margin of a filling is better protected when it has "a healthy gum septum covering it." I know Dr. Darby slightly and feel very certain that when he made that speech there was no intention of misrepresenting Dr. Black's saying. But there is too much difference between "always above the gum" and "a healthy gum septum" to permit this matter to



pass unnoticed. Drs. Trueman and Perry have both repeatedly dwelt on this matter of covering the gingival margins of our proximal fillings with a healthy gum septum. I supposed that this question had years ago been settled and I was amazed at the ideas set forth by a number of the men who took part in the debate. If you will merely observe how decay takes place around the margins of gold crowns which do not have a healthy gum covering their margins, or around buccal or labial fillings which have been placed in the gingival third, but whose gingival margin is not covered with a healthy gum septum, it will very quickly and definitely settle this question. If decay takes place in localities as easily kept clean as

the surfaces just mentioned, what then must we expect from a proximal surface where conditions are entirely different and where it is almost impossible to keep the teeth clean? I should like to have you consider this statement of mine with care for I really feel that it is worthy of much thought.

On page 384, Dr. Perry says that in May, 1877, he read a paper for the consideration of the members of the New York State Dental Society and in that paper was the following, viz.:

"In most cases I should prepare my cavities in accordance with the following general rules. Teeth of good structure, in a healthy mouth, having small cavities, may be filled without cutting till the margins are free. Teeth of medium quality should be cut till the margins of the cavities are just free on the buccal and lingual sides, and if not cut through from the grinding surface, should be so cut as to allow the gold to come just in sight along the proximo-grind-



ing surface borders, after the teeth have closed. Then the only danger exists at the cervical margin. In very frail teeth some small cavities may not be safe until cut up to and sometimes even under the gum.

"After twenty-four years I have no desire to change that statement except to make the last half of the last sentence a little more conservative."

After reading these two paragraphs a number of times I have come to the conclusion that Dr. Perry means by "good structure" teeth almost immune to decay; by "medium quality" teeth more susceptible to decay than the former; by "very frail" teeth very susceptible to decay. I cannot accept this statement just as it is made, for I do not recognize the differences in the human teeth to which

Dr. Perry refers. Some seven years ago Dr. Black, after a long series of investigations, during which extracted teeth from the mouths of over 100 different people were examined, found that no such differences existed as Dr. Perry states. Dr. Black's statement seemed so very radical that a controversy was at once started. Dr. J. L. Williams and Dr. Charles Tomes, men interested only in obtaining the truth, quickly proved that Dr. Black's results were the only ones that could be obtained, and that practically no differences in the density of teeth existed. Now if this is true, Dr. Perry is dealing with ideas a quarter of a century old which are without scientific worth. Let us suppose that Dr. Perry took 105 of his patients and for each destroyed a pulp, and thereafter injected some of the patient's saliva into the root canal so that it passed into the tissues beyond. In many of these cases abscesses would result. Suppose Dr. Perry then took 105 other patients, destroyed a pulp for each and by quite strictly surgical cleanliness treated and filled the root canals, and found that not a single abscess formed for the latter 105. Suppose he then gave the results of his labor for the consideration of the members of our profession, and that after the controversy which would be at once precipitated, a few leading men who were seeking the truth made similar experiments and found Dr. Perry's conclusions correct. Suppose that in spite of this, teachers in our dental schools should continue to teach that it was not necessary to use surgical cleanliness in treating pulps, for even the penetration of the human saliva into the root canals and tissue beyond amounted to nothing and an abscess could not form as a result of this ingress. I wonder how Dr. Perry would feel did the members of our profession treat the results of any investigation he might make as he has seen fit to treat those of Dr. Black. It will be necessary for Dr. Perry to very materially modify his expressed views before he can expect them to receive endorsement by the thoughtful and intelligent class of dentists. This class is constantly growing, and some of the men in it will not permit such statements as have been made by Dr. Perry to pass unnoticed. I am not seeking a controversy, but I am seeking the truth. Either Dr. Perry and his methods are right and I am wholly wrong or I am right and he is wholly wrong. For somewhat over a quarter of a century I have been following my calling and am seeking that knowledge which will aid in prolonging the usefulness of the human teeth. I wish the best only and that best by the easiest and simplest of meth-

ods. But I cannot in the least become reconciled to some of the statements made by Drs. Smith, Trueman and Perry and to illustrate my point I wish to draw a parallel or two. But before I do so let me say that there is much more to say about the teeth Dr. Perry designates as "good," "medium" and "frail." This I do not wish to do, for Dr. Black is present and I feel that he should interest you in the results of his labor. I was at Jacksonville a number of times while he was making these investigations and am somewhat familiar with the care Dr. Black exercised in making the investigations upon which his conclusions are based. Let him talk to you on this topic while I try to interest you in it from another point of view.

Let us assume that one of the members of Dr. Perry's family is taken sick. His physician is summoned, he comes, examines the patient and thereafter announces that a surgical operation is necessary. The patient goes to the hospital, the operation follows and in the course of several weeks he returns home greatly improved and is about as well as ever. In three years the patient is again taken sick. The physician is summoned. He comes, and as before, makes an examination, and thereafter announces that the patient must go to the hospital, as the trouble has recurred.

Dr. Perry asks: "Doctor, why has this trouble returned?"

The physician answers: "Well, Dr. Perry, there was little necessity for its returning had I been willing originally to make a longer incision, which meant sacrificing some sound tissue and making about a dozen extra stitches. But I am not a believer in the radical and extreme methods of the up to date surgeon. I prefer to operate three or four times instead of but once, as the other men do. It is very true that had I made the long incision it would have very greatly simplified the operation and that a complete change of conditions would have resulted from it. Still, I am not a believer in methods that are so extreme. I am still following the methods I used in 1877." After such a speech would Dr. Perry permit that man to operate again?

Now, let me draw a picture for Dr. Trueman. Let us assume that one of the members of his family becomes ill. After a consultation with his physician an operation is decided on. Dr. Trueman goes to the hospital with the patient. His physician comes in, merely dips his hands in some water, hastily dries them and says: "Have the patient get on the operating table and give the ether." Ether is administered and soon the patient is unconscious. The

physician opens his satchel and takes therefrom a case of instruments. The nurses in the meantime are undressing the patient. As soon as the patient is undressed the surgeon picks up a scalpel and starts to make an incision. His instruments have not been sterilized, nor have his hands been properly prepared, nor is that portion of the body on which he is going to operate clean. Would Dr. Trueman, with his knowledge of the results that follow operations made after this method, permit the man to operate? Let us assume still a little more. Suppose the surgeon did prepare his hands and instruments properly and also that portion of the patient's body on which he was to operate, yet in making his operation he allowed some of the "affected tissue" to remain. Does Dr. Trueman really believe that that would not do harm even if the surgeon could point to some patients who had lived in that condition for twenty years? (Page 371, eighth line.) Now these assumptions are things that Drs. Trueman and Perry can consider. They are advancing just such erroneous methods for our consideration. We know what would happen to surgeons who should make operations of this kind and we know what follows dental operations made according to the methods advanced by the men named. But perhaps it is true as a friend of mine so often says, that "We are so young a profession that we cannot learn all of these things except step by step." That statement may be very true, but it does seem to me if we make comparisons between our own work and general surgery that we shall be better able to apply the truths discovered in that sister profession without the necessity of painfully discovering them over again for ourselves. Further, in dealing with humanity at present I feel that the development of our dental knowledge has been so rapid that it has put somewhat different thoughts into the minds of those who have given this knowledge the consideration which it merits. Therefore, a person with the best understanding of our professional work cannot longer apply the ancient methods in his daily operations. Another thing. If we, as a profession, are to advance, then the quicker teachers and writers recognize that strong structure is what is desired for cavity margins, provided it has been extended sufficiently to include within its limits the areas of liability the better; if this has not been done, then there has not been a proper alteration in the parts and the disease will go on, or recur. The quicker all of us begin thinking along this line and make such alterations in our cavities that the disease cannot get a foothold the bet-

ter it will be for us and our patients. That, I feel, is the logical way to look at this subject.

In answer to Dr. Rhein let me say that no man reveres Dr. Webb's memory more than I. Am I not going through with what he had to contend with? What more need be said?

What is Dr. Ottolengui's contention? He asserts that he has never had a failure at the gingival margin of any of the fillings he has made, therefore, he feels that it is unnecessary to include the areas of liability to decay within the cavity margins or to have the gingival margin of fillings covered with a healthy gum septum. I answered him and to prove further that it was absolutely necessary to extend our margins in all directions so that they would pass all contact with the adjoining tooth, etc., took from a box containing 900 extracted filled teeth the first 100 that had fillings in their proximal surfaces. Eighty-five of the 100 had cavities of decay due wholly to nonextension for prevention. Eighty of these filled teeth contained amalgam fillings and twenty contained gold fillings. In closing the discussion of this debate Dr. Ottolengui, in dealing with the value of my statistics, throws out as valueless the teeth filled with amalgam. He thus leaves the subject with which he deals and attempts to deal with filling material. This action on his part will not do, for he must deal with failures, as they are all due to the same causes, irrespective of the filling material used. I wish I had time to draw a parallel or two for Dr. Ottolengui's consideration, but as it is this essay is much too long and I desire to close it by asking you to look again at these illustrations. Make mental photographs of them and then compare the conditions there pictured with the conditions you will find existing around the margins of so many fillings. Bear in mind that when operations are to be made there is something beside cavity preparation that is to be taken into consideration, and take this something else into consideration. Make an alteration in the parts so that the cause which led to the original disease is entirely done away with, and then place the parts in such condition that the disease cannot recur. In doing this you have done all that a human being can do.

THE PRESENT STATUS OF THE PORCELAIN INLAY.*

BY DR. W. N. MURRAY, MINNEAPOLIS, MINN.

In presenting this subject to you, I feel that a mistake has been made in selecting me to read a paper upon the porcelain inlay. First, because my experience with porcelain has not been sufficient for me to talk with that degree of intelligence that only experience can give. Second, the time has been so short and my mind has been so occupied with a sad misfortune in my own family, that I have not had the chance to correspond with those who have had experience and who could have given me reliable statistics regarding the work.

The subject of this paper, "The Present Status of the Porcelain Inlay," is somewhat misleading. Webster defines status as "state," "condition," "position of affairs," but we shall have to enlarge a little and deal with the porcelain inlay in a comparative sense. In the consideration of this subject we must entirely free our minds of any bias that might exist and consider it solely in the light of art and a tooth saving substance, for such it is given us by the enthusiasts of the porcelain inlay. We must also not be led into the error of condemning a substance without a fair and impartial trial. We must be just in comparing this with the old and tried filling materials, and not forget the fact that the old filling materials have not proven the best in all cases which have come under our care, and we should remember that there is still room for improvement. I believe that it is estimated that the average life of a gold filling, with the skill that exists among the profession at large, is from three to four years. Let me add, while it may sound a little like egotism, that the members of the G. V. Black Club have a much better record than this. Now with statistics of this kind staring us in the face, is it to be wondered at that we have new departure men and porcelain enthusiasts? I think it safe to assume that 75 per cent of the profession are not making perfect work or are approaching perfection with any method. There is too much commerce in our profession to expect any other result, but let me tell you that the man who attempts to make porcelain inlays for commercial purposes is going to meet with bitter disappointment.

The skill required to do this work is of such an entirely different nature from the old methods, and the time required and the uncertain results will, I think, almost prohibit the use of porcelain for

*Read before the G. V. Black Dental Club, February 21, 1902.

purely commercial purposes. I believe that it is possible for a man to be an expert gold operator and be a dismal failure with porcelain, and vice versa.

The faculties that are brought into play in executing a fine operation in gold are worthless in the manipulation of porcelain. In gold we carry our filling along by a series of progressions and are able to rectify any slight defect before the filling is finished. In porcelain this is entirely different and there is not the slightest chance offered us to correct any defect, however small, and we might just as well throw up the sponge and commence all over again.

While I have mentioned the fact that in the manipulation of gold and porcelain they are dissimilar, yet I wish to add that anything that comes into our profession that requires the deftness, the neatness, the persistence and skill that the inlay calls for, I should feel like encouraging, as I believe that indirectly it will make more careful operators of all of us.

I wish to say something about the claims of the porcelain men. A short time ago Dr. Jenkins, Jr., gave table clinics in our dental depots. Knowing that I was to read a paper at this meeting, I embraced the opportunity of asking him some pretty direct questions, among others I asked him this one: "Dr. Jenkins, do you believe that an inlay was ever placed in the teeth that in some part some imperfection did not exist? The material being of such a brittle nature must we not expect some result of this kind?" He answered me without any hesitation: "No, sir! I believe that as perfect fillings can be made with porcelain as with gold." Another question: "In a large practice such as your father must have in Dresden, consisting mainly of porcelain, does he not have much annoyance from the resetting of inlays?" He answered me very decidedly, "No, sir! No more than you would have with gold or any other filling material." In commenting upon this I shall simply say, that considering the cavity preparation that we of necessity are compelled to make and the nature of the material in the inlay, I could not consistently have answered these questions with the same confidence that Dr. Jenkins did. It is but just to Dr. Jenkins to state that undoubtedly 70 per cent of the fillings placed in the teeth in France and Germany are either porcelain or cement, consequently he may have had sufficient opportunity and experience to have fully warranted him in answering my questions as he did; but from the

standpoint of the work of the clinicians who have appeared before this club, I still doubt the correctness of his answers.

Now let us consider the margins of the inlay. I think it unfair for expert gold workers to criticise inlays too harshly. The nature of the operations is such that we cannot with any reason expect the same margins as with gold. One is swaged directly against the cavity walls and margins, the other is fitted as close as the skill and methods of the operator will allow him to make, depending largely upon his cement to correct any imperfections that might exist. There is another recommendation for the inlay, and it partially answers the criticisms in regard to the margins. We all know that it is an exceptional case where decay develops around a cement filling, even where the cement has nearly disappeared from the cavity. The same principle will apply to the inlay only with double force, as the destructive forces exerted upon the cement in the inlay are reduced to a minimum. If the inlay cannot be fitted so close that the margins are imperceptible at the distance of two or three feet I should call that operation almost a failure.

Two questions of importance are open for our consideration. First, high or low fusing porcelain, and, second, a swaged matrix, or a matrix burnished in the cavity.

According to the journals, a large majority of the best porcelain workers in this country use high fusing bodies, but do not use the swaged matrix. These latter claim for high fusing bodies stability of color during fusing and a more natural effect, alleging that the low fusing bodies usually containing a large proportion of glass, give that glassy effect, and do not have the strength that the others do.

The next question of importance is the matrix. While a few men seem to have fairly good results from burnishing the matrix in the cavity, yet the fillings made by some of our greatest exponents of this method, are far from satisfactory in adaptation or color, the two essential requisites, which is a sufficient reason to approach this method with caution.

While the failure of one man in this method should not condemn it, the principle of the work is what I wish to consider. Upon the adaptation of the inlay to the cavity depends its life. Can we afford to take up a system which is sure to give a filling the thickness of the matrix smaller than the cavity, and on top of that the

uncertainty of removing a matrix of so thin a material without changing its form?

I maintain that, for the most skillful dentist to be successful in this class of work, he must eliminate everything or method which tends to make an uncertainty of the work. If one individual happens to be skillful enough to produce good results with a system that depends upon personal equation, do not think it possible for everybody to do the same. We are apt to take a short cut and sacrifice good results to a saving of time, and in the end be compelled to do the work over.

This class of work requires more mechanical skill than anything else in dentistry. This statement is backed up by the hundreds who have tried to make porcelain inlays and have failed. No other branch in dentistry has had as many failures, in comparison to the number who have tried it, and one of the main reasons is that the majority have tried to place the porcelain inlay, in as short a time as they could make a gold filling, and most of the dentists have been looking for a short method instead of an exact method to do the work.

The sooner we come to our senses and realize that we have the hardest proposition in dentistry to solve, the quicker we shall stop trying to place porcelain inlays on a level with gold and other fillings. It is as much more difficult to properly place an inlay as gold is more difficult than amalgam; consequently we should consider only the best methods. Aim to get the results, regardless of time which can be eliminated as one becomes proficient in the methods of doing this work. I have laid stress on this part of the subject, as I think so many dentists try to master this branch of dentistry by this system, and I believe swaging is the only method of obtaining a correct matrix. If one will take the same case, and burnish a matrix in the cavity, and then take an impression and swage a matrix, he will be surprised to see how much more perfect the swaged matrix is than the burnished one.

Many demonstrators, desiring to sell outfits, will hold a tooth in their hands with a cavity properly prepared for their work, and burnish a matrix in nicely, but to do it in the mouth is quite a different thing. They can claim perfection in all things, but when one thinks in regard to the color that the smallest particle of a grain too much of one powder, gives a different color, it is easy to realize

that it is almost impossible to mix two powders together in small quantities, and get the same color twice.

I mention these uncertainties not to discourage, but to try to assist you to start correctly.

A thin matrix on a high-fusing material is very difficult to remove, and the slightest particle left on it will change the color at that point. So my advice would be, to take an impression of your cavity, and swedge a matrix, using 15/1000 platinum, which can be easily disengaged from the inlay.

What class of cavities are indicated for porcelain?

In view of the sweeping allegations made by the enthusiasts of the inlay, I do not feel warranted in discussing or trying to refute their statements, but I will say that from the difficulties encountered in the operation, I should be extremely cautious and conservative in placing porcelain in many places where they have advocated its use, for the reason that I believe we can do something better for our patients. I think that the six anterior teeth which we have so long disfigured with large gold fillings especially in the mouths of ladies, present a field sufficiently large and difficult for our serious consideration. If we can perfect ourselves in this branch of our profession so that we can give our patients practically the same assurance as with gold, in these teeth we have taken a step in advance, and I believe that with careful experimenting and study we will be surprised at the results we may be able to obtain.

In summing up, the present status of the porcelain inlay, let me say, that while our journals are full of literature upon this subject, yet the percentage of dentists practicing this specialty is comparatively small. In a city of 200,000 people probably four, not to exceed five, are making porcelain inlays and the same ratio will apply to our larger cities. There are good reasons for this. First, the extreme difficulties encountered in making the work. Second, the inability of the patient to pay a fee sufficient for it, and third, the caution of the dentist in recommending a filling that we know so little about, and I might add that the man who has been years building up a large practice along certain lines does not have the time to devote to this work that he conscientiously feels it demands. It would be almost criminal for me to close this paper without a mention of the artistic results that can be obtained with this substance. Any filling material that will simulate the natural teeth so

closely that it is difficult to distinguish it from the natural tooth itself has no rival in our profession, and I say that if any system of cavity preparation can be evolved that will give us the same confidence as with the old methods, there should be none so bigoted or wedded to old theories as not to change. Let me say, further, that I believe the porcelain inlay has come to stay, and that we must adjust ourselves to the conditions.

A PORCELAIN CROWN.*

BY FORREST HOY ORTON, D. D. S., ST. PAUL, MINN.

When the injunction to write a paper describing the construction of a porcelain crown was served on me, I demurred, claiming that I had nothing original, and that this had been done so often in dental societies and journals that every dentist must be familiar with this work, but I was overruled. Confidentially, I believe that the executive committee thought it would be appropriate to observe this lenten season, by inflicting some sort of penance on you all, and I was the chosen instrument. Before describing the construction of a porcelain crown, I would like to say a few words in regard to the abuse of crown work. There is a growing fashion or disposition on the part of too many dentists, to resort to crowns, whenever the tooth presents conditions slightly unfavorable to restoration by filling.

The crown is not intended to take the place of a large or difficult filling. I have known men who would talk conservation of tooth structure on every occasion and yet cut off and crown teeth that might have been filled and built up to perform good service for many years, and this sort of thing, to say the least, is inconsistent. I acknowledge that occasionally circumstances arise when it is permissible or where we are obliged to place a porcelain crown for *esthetic* reasons, when the tooth might have been filled. What our patients need and what they want may be a very different thing. To undertake to always supply our patients with a thing you think they need, but which they do not want, is to have your head elevated on a pike. But we should never forget our duty to our profession as teachers to educate our patients to appreciate the things they need.

*Read at the annual clinic of the G. V. Black Club, of St. Paul, February 1902.

As the first requisite to successful crown work is the exercise of judgment in deciding when a crown is indicated, the next important step is to get the surroundings in a favorable condition to receive the crown. In 80 per cent of the cases where a crown is indicated, the interproximal space and gum septum are not normal. Either the tooth has been so frequently filled that there are no walls left to hold a filling, or the tooth has lost the greater part of its crown, and the teeth on either side have dropped together. To put a crown on in this case, without first getting sufficient separation to fully restore the width of the interproximal spaces and mesio-distal breadth of the tooth, is to invite all the evils which follow the loss of the gum septum, the crowding in of food, and the formation of a pocket, until finally, the health of the peridental membrane is affected. To get this condition, in some cases where the interproximal space has been entirely obliterated and the proximating teeth have dropped into the space formerly occupied by the crown of the broken down root, sometimes requires weeks of time and much discomfort on the part of the patient. But this operation when skillfully performed, is supposed to be permanent, and when the alternative is explained to the patient, he seldom fails to appreciate the pains you are taking to do good work. Nor is the profit all to the patient, for he who has made a good operation knows what pleasure is.

The next step should be the selection of color or shade. No mechanical excellence can make up for a defective match. If the shades of your crown do not blend with the adjoining teeth, as well or even better than did the natural tooth, your patient will say the crown is a poor operation. Approximating the color with a shade ring, and afterward at the dental depot, getting as near this as you can, is guesswork. The identical facing that you intend to use should be selected and ground, and placed in the mouth. Very often that which appeared to be the color, when held up to the teeth, does not harmonize when placed in its position, owing, I presume, to different shadows in the mouth. Sometimes it is possible to match the cervical two-thirds of the adjoining teeth but not the incisal third, from the fact that the incisal third of the natural teeth is so thin that it gives them a bluish or greyish reflection, or a gold filling has given it a reddish tinge, and here is where the all porcelain crown has an advantage over the Richmond. By grinding out the

lingual surface of the facing at this point, and baking in the proper color, you can give the tooth any desired shade.

Presuming that the root has been properly treated and the apical foramen filled, the next step is the reaming out of the root canal to receive the post. It is advisable to do this before trimming the root, as you can apply the rubber, and thus secure a dry field on which to work. The question of the best form to give the anchor post must always be governed, to a certain extent, by the shape of the root. When possible, I believe a post having the shape of the pin in the Logan crown, is the best. Whatever shape you give the post, it should at least be as long as the crown of the tooth, and extend beyond the floor of the cap far enough to engage the pins of the porcelain facing. The root should be cut down to within a sixteenth of an inch of the gum margin, and trimmed to represent an inverted cone shape.

Any mutilation of the gum, especially on the buccal or lingual side, will destroy the contour of the gum margin and make it much more difficult to imitate the adjoining teeth. By thus shaping the root end, you have not materially weakened the root. There is enough tooth left above the gum for the band to get a firm anchorage. It does not increase the thickness of the root, nor cause pressure by narrowing the interproximal space, and it allows you to get a sufficient amount of porcelain, so that the crown will not be weak at this point. You will have more than a thin veneer of porcelain, which would not be the case if you used a straight band. It allows you to see the gingival circumference of the band and with a foot plugger, to burnish it so close to the root, that there is no danger of irritation. The fitting of the band requires more skill than any other part of the crown. Just in proportion as you have patience and ability to take infinite pains, will you be successful. The platinum should be thin enough to be burnished down on the root, 31 or 32 gauge, for the slightest kink or overlap of the band, will be the starting point for gingivitis. The measurements are taken in the usual way with wire. The band should be cut a trifle longer, to allow the ends being lapped over on the bias, and then from the opposite side a V shaped piece cut out and the ends brought together and soldered with platinum solder. The band should now be fitted to the root, and by burnishing and swedging, every part should be closely adapted. Then lay the band on a file and hone it flat; solder top of twenty-eight or twenty-nine gauge

platinum. This will stiffen and hold the band in shape. The impression should be taken in plaster, and if it is one of the anterior teeth to be crowned, it is often useful to include the teeth on the opposite side of the mouth in the impression, as it will enable you to note any little peculiarity or irregularity of the corresponding tooth and reproduce it in the crown.

The facing should be ground so as to cover the labial face of the band clear to its edge (passing sample). The pins in the facing should be soldered to the post with platinum solder. Now the piece is ready to receive the porcelain body. Cleanliness is essential. Any particle of foreign matter will cause a flaw in your porcelain. The proper color of porcelain selected, I advise using darker color porcelain for the first bake. This will enable you to shade your crown at the cervical third and in the crevices. The porcelain placed on a clean glass slab and mixed with pure water to the consistency of dough. Holding the work in a pin vise and applying the body, force it into all the crevices by jarring the pin with a scroll saw. This will also bring the moisture to the surface, where it can be absorbed with bibulous paper. The body should be added gradually, and each particle should be jarred down and dried until no moisture appears. The dental profession will owe a debt of gratitude to the person who will invent some method of packing these crowns under pressure, for even by taking the greatest care possible, in packing porcelain and absorbing the moisture, these crowns are more or less porous, and any one can discover it if he will break one after it has been worn in the mouth. This may be due, to a certain extent, to the character of the porcelain furnished us. In carving or modeling the crown, to each one is given the opportunity to express his inherent artistic ability, and to the extent of his talent is he able to appreciate and enjoy the happiness in the fulfillment of his art. There is no greater joy than reproducing nature; to be able to reach Divine thought; and that is what we are doing, or aiming to do, when we mold into form any portion of nature. The high fusing porcelains shrink about 15 per cent, therefore the crown requires to be baked at least twice. At the second bake, particular attention should be given the point of contact and occlusion. It is advisable to make these parts a trifle full, for if on the second bake it does not shrink to the desired amount, the porcelain can easily be ground off and polished to the required form.

As to the comparative virtues of the many different makes of porcelain on the market, I cannot speak from personal experience. A large majority of experienced workers of porcelain are satisfied that a medium high fusing body is absolutely necessary. I believe there are enthusiasts who claim that a porcelain crown can be used whenever crown work is indicated. Such an assertion can only come from a want of knowledge of the fact that porcelain is only strong in bulk.

PORCELAIN BRIDGE WORK.*

BY J. E. NYMAN, D. D. S., CHICAGO, ILL.

Among the matters in discussion and dispute among the members of the profession, with able advocates and antagonists endeavoring to sustain their respective positions both by argument and demonstration, is the subject upon which I address you.

There are those who vehemently denounce in toto porcelain bridge work as unworthy of application anywhere and they point to the numerous failures they have had in their own practice and observed in that of others. Filled with disappointment and disgust, they removed the wrecks, glanced at them superficially, threw them into the scrap heap, cursed the hour they ever took up porcelain bridge work and went back to the old methods which, while they did not yield such artistic results and sometimes failed in detail, very seldom broke down utterly—an enemy from that time forth to anything porcelain.

There are others who have met in their practices and have observed in others, similar failures and have felt the same disappointment and disgust, but having been endowed or having acquired the trait of philosophy, have not in those perturbed moments forgotten that there is a relation between cause and effect, that there is no result without a reason for it; and so instead of a superficial examination have scrutinized it closely, instead of throwing the wreck among the scraps, have laid it carefully to one side to be pondered over later on in the calmer moments, and realizing that there was a cause or perhaps causes for the failure, have sought for them, found them, and finally, it may be after long study and experiment, but finally have corrected or eliminated them, and so by patient, per-

*Read at the annual clinic of the G. V. Black Dental Club, St. Paul, Minn., February, 1902.

severing effort profiting by experience, sustained by enthusiasm; some have turned failure to success, have convinced themselves and are convincing others that porcelain bridge work properly executed under proper conditions is a success.

And even among those of us who believe in and construct porcelain bridges there is dissension and discussion; principally over the question of saddles imbedded permanently in the gum of the intervening space between the teeth used as abutments.

Those opposed to them under all circumstances report the many instances in which they have found masses of hypertrophied tissue, tender to the touch and bleeding upon the least irritation at points along the edge of the saddle, or the cases where the gum has receded from the saddle and left a crevice into which debris of food has wedged, degenerating into a fermenting mass, causing foul tastes and odors, and inflammation of the tissues.

Others who have observed gold bridge work with porcelain facings attached have noticed that the necks of the facings have been intentionally, and some of the metallic structure unintentionally, imbedded with a haphazard manner in the gum tissue without pathological results believe that a polished metal surface upon which the secretions of the mouth have no effect, which was accurately imbedded in the tissues would yield similar results; favor them in cases that are favorable for them and believe that there are reasons for these pathological sequences sometimes found, and that they may be obviated. These will be discussed later.

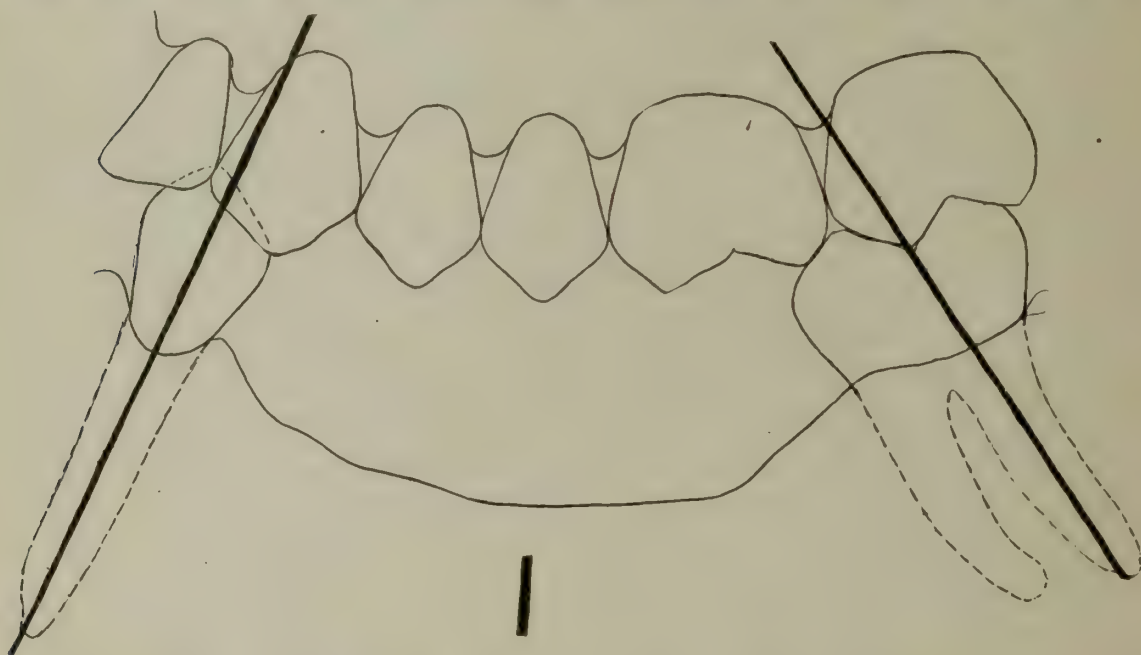
There are general considerations involved in the application of bridge work such as regards the number, situation and condition of teeth or roots which may serve as abutments, their situation with regard to the curvature of the arch where the bridge is to be inserted and their position in the jaw, as to whether they have become tilted through the loss of the adjacent teeth and abnormal articulation and require regulating previous to the insertion of bridge work. But these are matters of a general rather than of a special nature, and are not considered to be within the scope of this paper but might form a theme for a paper upon that subject.

We will assume that a case indicating and favorable for a bridge has presented itself, the first question is, shall it be of gold or porcelain? This depends primarily upon the length of bite over the anterior abutment and the vacant space. The length of bite over the

posterior abutment, if it be a molar, may be disregarded, as a metal crown may be constructed for that, if necessary.

The length of bite may best be determined by taking a bite and impression of the case as it stands, constructing articulated models and determining this point by measurement; if there be a space of 5 mm. between the gum and the occluding cusps and of a 4mm. between the probable point to which you may grind the anterior abutment and its occluding cusp then you may safely decide to insert a porcelain bridge.

The next question is as to the nature of the crown to be used for the posterior abutment; if the length of bite be less than 4 mm. as before indicated, or if the compensating curve of the jaw be great so that the axes of the abutments converge markedly (Fig. 1) a



platinum shell crown had best be used, always strengthening the anterior half of the band by soldering on an additional piece of platinum plate.

Then arises the mooted question of a saddle for the bridge. If the gums are in a healthy condition and a year has elapsed since the loss of teeth a saddle may be used, but—

If any general pathological condition of the gums exists.

If the teeth have been but recently removed.

If the buccal ligaments are attached to the median line of the ridge.

Then a saddle imbedded in the gum is absolutely contraindicated.

I do not ever regard a saddle as a necessity, but do regard one as the means of obtaining the best results from a mechanical, hygienic and artistic consideration.

They may be considered indicated and may be applied at any point in the mouth if conditions are favorable.

While a saddle bridge is the strongest porcelain bridge that may be constructed, the saddle itself cannot be regarded as an element of strength, the resistant power of twenty-eight gauge platinum (the heaviest gauge to be used) to longitudinal stress is a negligible quantity.

The saddle bridge is stronger than any other porcelain bridge for the same case would be because the bulk of porcelain is greater, the area of its cross section is greater—due to the fact that the accurate adaptation of the saddle permits the extension of the porcelain to the gum, a procedure which if attempted without a saddle would lead to disastrous results.

The causes of pathological conditions in the tissues covered by the saddle and adjacent thereto may be due—

To rough edges or surfaces.

To too deep imbedment in the tissues.

To too slight imbedment in the tissues.

To foreign matter (usually cement) imbedded beneath the saddle.

To the impingement of the saddle upon the buccal ligaments.

Any and all of which will cause a serious disturbance of the circulation of the aforesaid tissues.

The pernicious influence of rough edges or surfaces in contact with gum tissue **and** of foreign substances imprisoned beneath the saddle is so patent to every one that it need not be dwelt upon.

The deep imbedment of the saddle in the tissues will cause hypertrophy or atrophy according to the vascularity of the tissues. In highly vascular tissues it results in stasis, increased blood pressure, dilation and final rupture of the walls of the minute blood vessels. The blood is forced into the intercellular mass of the tissue and a hypertrophy results extremely tender to pressure and bleeding upon slight irritation. This extends until the entire region becomes so painful that the bridge must be removed, or infection occurs at the time of some of the hemorrhages and a condition ensues which necessitates its removal.

In slightly vascular tissues stasis results, diminished blood supply owing to the low pressure of the circulation, atrophy, a

formation of a crevice between saddle and gum into which food wedges, ferments and causes conditions which necessitate removal. If too slightly imbedded particles of food will soon be forced just under the edges, causing similar conditions and results.

The impingement of the saddle upon the buccal ligaments causes irritation every time the mouth is opened by the stretching and rubbing of them over the edges of the saddle, resulting in inflammation which increases until it can no longer be endured.

The imprisonment of cement due to the escape of the surplus underneath the saddle during the setting of the bridge may be avoided by setting with gutta-percha and by other means to be referred to later on. Precautions should always be taken to have the surfaces of the saddle and the gum scrupulously clean.

A saddle imbedded in the gums under favorable conditions that—

Has no rough edges or surfaces.

Has no foreign matter imprisoned beneath it.

Does not impinge upon the buccal ligaments.

Does not seriously disturb the circulation of the adjacent tissues, and

Is accurately and tightly imbedded in the gum may be expected to, and does, yield permanent results.

The causes of the numerous failures of porcelain bridges and the manner of elimination are about as follows:

Disregard of the length of bite.

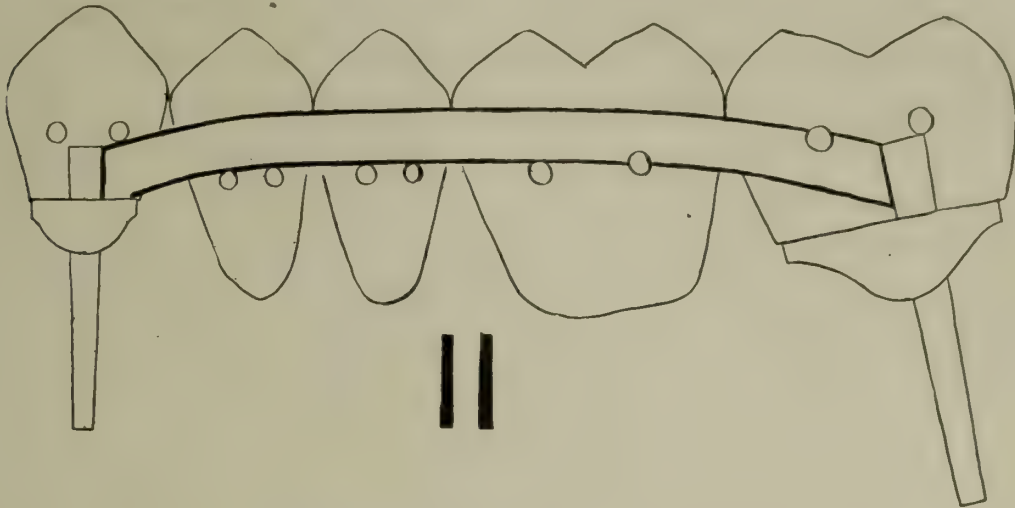
Inaccurate fusing—corrected by the use of some material the fusing point of which was identical with that of the porcelain and which could be observed.

The use of low fusing bodies which were lacking in structural strength—corrected by the use of high fusing bodies possessing high structural strength.

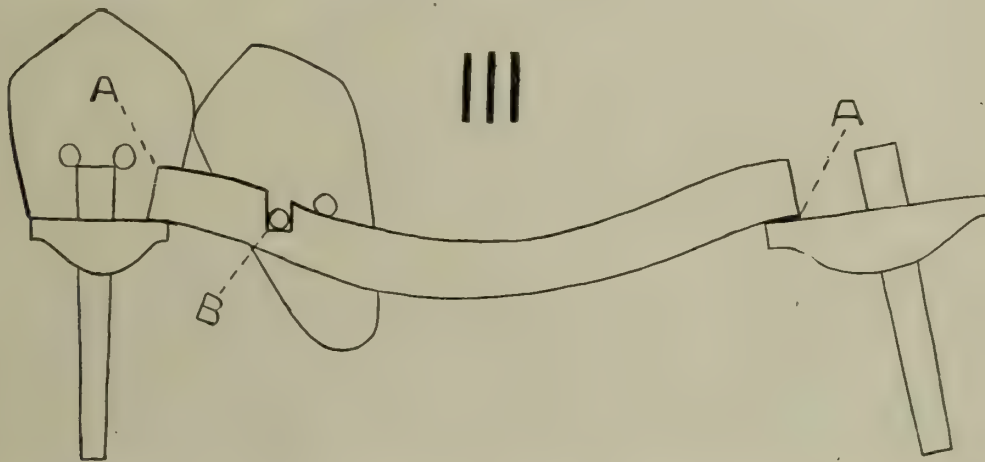
The use of gold as a solder rendering it necessary that every joint should be a perfect contact, a thing very difficult to accomplish and often unattained, with the result that the framework separated at one or more points during the fusing of the body, throwing the entire stress upon the porcelain alone, which sooner or later gave away at those points. This was obviated by the use of platinum solder devised and introduced by Dr. Ames.

Injudicious judgment in regard to the relative proportion of metal framework and porcelain led first to insufficient amount of framework and then to the other extreme, so great an amount of

metal structure that there was room but for thin veneers of porcelain. The error was frequently made of placing the cross beam too close to the grinding surface.



(Experience finally led to the adoption of a rational proportion which has yielded splendid results.)



The failure to extend and solder the cross beams to the posts of the abutments.

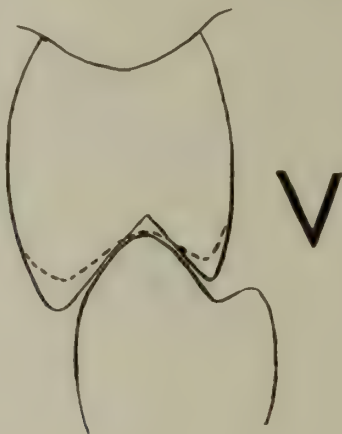


The cutting of a deep groove in a cross beam to receive the pin of a facing tilted to accommodate some peculiar articulation without filling in the gap, Fig. III, by soldering in a piece of iridio-platinum wire.

The carving of deep sulci and the building up of high, sharp

cusps for artistic effect, allowing the occluding cusps to exert a wedging force buccally and lingually whenever the teeth are brought together with food between them.

Bearing in mind these factors of failure, construct your abutment caps as for individual crowns, using as large posts as possible and bands with deep lingual portions reinforced with solder. Adjust the posts as nearly parallel as it is possible, place caps in position with a little wax about the posts to hold them securely in place. Take a plaster impression and a wax bite. Remove the caps from the impression, trim away any part of it, buccally or lingually, except within a distance of four millimeters from the median line of the ridge, that will prevent a plaster model from separating. Varnish



thoroughly, fill holes left by posts and the depressions left by the teeth with cotton saturated with vaseline, and pour a plaster model, including only the abutment impressions and the intervening space.

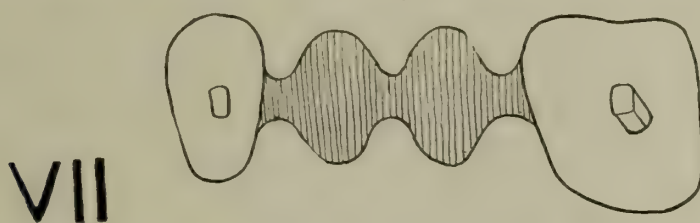
Trim this model so that it will draw readily from sand, construct a babbitt metal die, swage a piece of platinum of from 28 to 30 gauge, according to the density of the gum tissue, extending to within one-half millimeter of the edge of each abutment and 4 millimeters buccally and lingually from the medium line of the ridge.

Fill the caps and coat the posts with wax, remove the cotton from the original impression, replace the caps, invert the saddle and place it in position between the caps; pour plaster model, mounting it on an articulator at the same time. Upon separating the model from the impression the saddle will be found imbedded to a uniform depth equal to the thickness of the metal used. This is the only method by which the saddle may be imbedded uniformly in either the model or the gum tissue. It is impossible to scrape any extent

of surface of plaster to a uniform depth owing to the varying density of the material. The wax bite is now placed upon the model and the occluding model is run, giving an approximate articulation. The cross-beam, which should be of 12 gauge iridio-platinum wire rolled to 15 gauge, is fitted to the case with its large diameter placed in the line of greatest stress, adjusting it as close as possible and allowing two-thirds of its width to extend buccally beyond the medi-



an line, Fig. VIII, and bringing it in contact with the posts and caps of the abutments, wax in place. Now grind the facings approximately to place, and while in such position mark the contour of their necks upon the saddle and trim the intervening material at points corresponding with the interproximal spaces. Fig. VII.



Having waxed caps, cross-beam and saddle together in their relative positions, remove them from the model, invest and tack them together with 25 per cent platinum solder. Polish the inner surface of the saddle and round its edges. Adjust the metal structure upon the roots. If the saddle impinges upon the buccal ligament at any point it must be trimmed away until it no longer does so, the facing being ground afterward to correspond.

Dry the roots and canals, place some Gilbert's stopping about the posts and force the structure firmly to place upon the roots and gum.

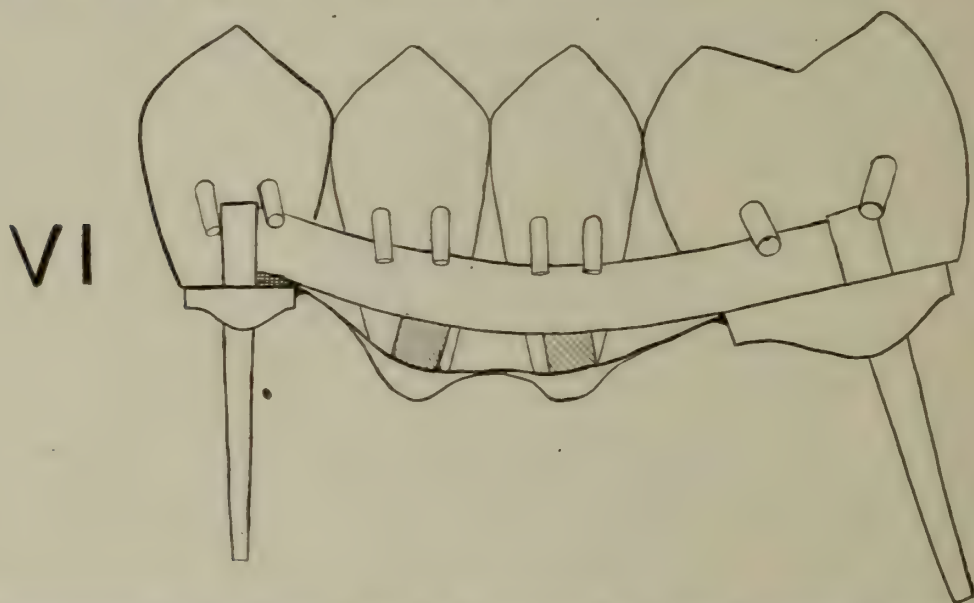
Should the gum along the edge of the saddle at first blanch but regain the normal color in a couple of minutes, gently burnish the edges into the tissue until it blanches again. Cease burnishing upon any evidence of pain. If the gums regain their color within a maximum limit of ten minutes you may feel assured that you have not seriously disturbed the circulation of the tissue and that trouble

will not ensue. An impression and bite is taken at the same time in modeling compound.

Again fill caps and coat posts with wax and obtain the articulated models. Remove structure, reinvest and thoroughly solder all the parts.

Flatten the surfaces of the pins of the facings to obtain as great contact surface with the cross-beam as possible.

Articulate the facings, wax them in position, invest, allowing the investment to extend over the cutting edges. After the investment is thoroughly hardened remove the wax, bend the pins into close contact with the cross-beam. Trim away the investment, exposing the inner surfaces of the facings, solder with pure gold, using the least amount possible and maintaining the heat which the gold flows for a period of about 30 seconds.



(This represents the relative size and positions of the different structures of the bridge in its skeleton state.)

Gold is used as a solder to avoid the discoloration of the delicate yellow shades of the necks of the facings, which frequently results from the high heat required for flowing platinum solder. After removing from the investment the film usually found upon the platinum, structure is removed by polishing roughly with pumice and coarse sand paper discs. Care is taken that all particles of the investment material have been removed from the many crevices of the bridge in this skeleton state. Porcelain body is now applied in the usual manner and is fused to a point just a little above that of biscuiting. This is done to avoid the bubbling which frequently occurs after the numerous fusings required for a bridge.

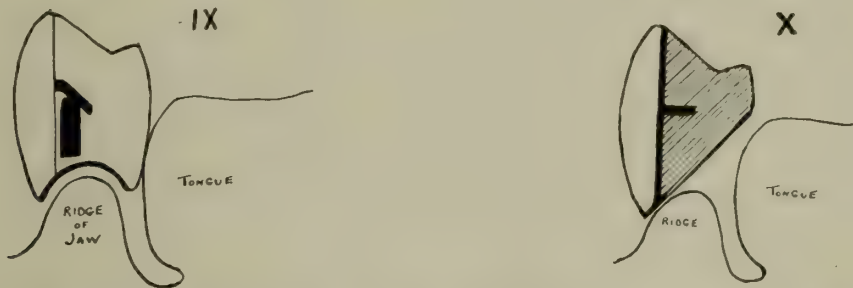
Just before the final fusing, fuse in some pink gum enamel between the necks of the facings. Even though this does not accurately match the color of the gum, it approximates closely under the conditions of light and shadow obtained in the mouth, gives a line of demarcation between the teeth and avoids the one-piece appearance often seen in porcelain bridges on which the gum enamel has not been used.

After completion verify the adjustment and articulation by trial in the mouth. If this be satisfactory the bridge may be set with either gutta-percha or with cement—preferably with gutta-percha.

If set with cement, loop two ligatures about the bridge at the juncture of the saddle and abutment caps, in which a piece of cotton has been fixed in a knot; then, after the bridge is set, draw out the ligatures, the knotted portions of which will force out the surplus cement.

Bridge with suspended saddle,

Should there be positive contraindications for an imbedded saddle, a bridge may be constructed with suspended saddle that will not impinge upon the gum as follows:



Take impression and bite with abutment caps upon the roots. When model is obtained fit a piece of sheet wax of about 1 mm. thickness between the caps, adjusting it to the model and trimming it as before indicated.

Take impressions of this wax piece and caps; obtain dies and swage a piece of 28 or 29 gauge platinum, allowing it to extend over on top of the caps; this, after being fitted to place, will be suspended above the gum a distance equal to thickness of the sheet wax used. Proceed from this point according to the directions previously given.

The same precautions must be observed in regard to the buccal ligaments with the suspended saddle as with the imbedded saddle.

This bridge, whose cross-section is indicated in Fig. 9, is preferable to the usual gold and porcelain bridge with the triangular cross-

section (Fig. 10), because it is possible to give it quite a little lingual contour and the extension of the lingual wall so close to the gum lessens the liability to accumulation of food beneath the bridge, while it does not increase the difficulty of removal of debris; this is especially true of lower bridges.

METHOD OF CONSTRUCTING A PERFECT FITTING DENTAL CLASP.

BY G. W. PITTS, D. D. S., CHICAGO, ILL.

The practice of constructing dental clasps is one which has been in use for a long time, and one which has caused no end of trouble to both patient and operator, and eventually the loss of a great many teeth which in the beginning seemed too good to sacrifice and crown. This is due to ill-fitting clasps constructed according to the method generally in use to-day. There is, however, a clasp recommended by the late Dr. W. G. A. Bonwill which should be more generally used, and would to a great extent do away with the denuding or wearing away of tooth surfaces caused by the upward and downward excursions of the clasp upon the tooth.

The clasp referred to is the one with the lug extending over the occlusal surface, which prevents to a degree these movements.

There are, however, other things which are to be taken into consideration as reasons why we should not too freely use dental clasps to retain partial dentures, viz.:

That it is impossible to make a clasp either by forming it to zinc or metal dies which will be of sufficient strength to accomplish the result desired, and accurately fit all surfaces of its retainer. The difficulty encountered is that a clasp metal of over twenty-six gauge is so stiff and rigid that it is worked with the greatest difficulty, and when finished is usually very unsatisfactory in adaptation, and also that a clasp made of twenty-six gauge standard clasp metal is not of sufficient strength to make a clasp which will stand the force applied to it, and keep its shape and position.

A dental clasp which will fit accurately and given sufficient strength under all circumstances may be constructed by the following method:

First, take an impression of the tooth you intend to construct clasp for. Treat in usual way, and fill with investment compound for model. By adding a little whiting or prepared chalk to invest-

ment, one can acquire a great deal smoother model, a thing which is much desired at this point. About the tooth form burnish a very thin piece of platinum about the shape you intend to have clasp when completed, leaving it flush and extending well into the sulci. Wax securely, and fit approximately over it clasp metal No. 30 gauge. When it fits to your satisfaction run melted wax between platinum and clasp metal, allow to cool, and invest model platinum matrix and clasp metal. When investment has hardened, remove wax with hot water and heat case until all moisture has evaporated. To complete, flow twenty carat solder between platinum and clasp metal. Finish in the usual way.

PROCEEDINGS OF SOCIETIES.

FIRST ANNUAL CLINIC OF SCHOOL OF DENTISTRY,
UNIVERSITY OF ILLINOIS, HELD AT THE COLLEGE
BUILDING, 813 WEST HARRISON STREET, CHI-
CAGO, WEDNESDAY, MARCH 26, 1902.

REPORTED BY DRs. F. W. AND R. W. PARKER.

This was one of the most successful clinical meetings ever held in the city. About seven hundred names were enrolled on the college register. Luncheon was served in the college building to all present. In the evening the college gave a theater party to the clinicians and specially invited guests.

Clinic No. 1. Dr. L. P. Haskell of Chicago exhibited a number of models of difficult cases in the construction of artificial dentures, giving suggestions as to how to overcome the difficulties which arise in the construction of such dentures. Dr. Haskell also demonstrated the making and baking of a continuous gum case, using the Hammond drop furnace.

Clinic No. 2. Dr. J. H. Woolley of Chicago filled occluso-proximal cavity in upper bicuspid by covering gingival wall and margin with noncohesive gold, then filling cavity with cement. This method is held by the clinician superior to others, as the gold is not dissolved and the gingival portion of the cavity is protected and preserved.

Clinic No. 3. Dr. L. W. Nevius of Chicago administered

nitrous-oxide to a number of patients and skillfully extracted a number of teeth.

Clinic No. 4. Dr. F. M. Richardson of Chicago administered nitrous-oxide, using the Hurd inhaler, by which the operator is enabled to prolong the anesthesia and more time is afforded for the operation. Dr. Richardson operated on a number of patients very successfully.

Clinic No. 5. Dr. A. O. Hunt of Omaha demonstrated the Griswold and Brewster methods of crowning.

Clinic No. 6. Dr. L. O. Green of Chicago used local anesthetic (antiseptic) "acestoria" and extracted teeth quite painlessly for a number of patients.

Clinic No. 7. Dr. W. A. Stevens of Chicago demonstrated a method of removing one or more teeth from a vulcanite plate without any distortion of the denture or checking of any surrounding teeth or of the teeth to be removed. The method is to apply to the teeth to be removed a coating of sperm or other oil. Then hold tooth to be removed directly over a small pointed flame. As soon as tooth is thoroughly heated it may be removed without difficulty. This was a very good demonstration of a practical point.

Clinic No. 8. Dr. R. N. Laurance of Lincoln, Ill., treated pyorrhoea cases, using Younger instruments and others designed by the clinician himself. Glyco-thymoline was used as antiseptic during the treatment and recommended as a mouth wash. Lactic acid is used in the pockets about the necks of the teeth "to seal up wound and give nature a chance to form scar tissue." The clinician uses iodine, aconite, tannic acid and glycerine externally on gums.

Clinic No. 9. Dr. F. H. Skinner of Chicago prepared cavity in hyper-sensitive dentine under nitrous-oxide administered with Hurd inhaler. The cavity was then filled with tin and gold until the pulpal wall was protected, then finished with platinum and gold folds. This combination of materials is said to conduct thermal changes less readily.

Clinic No. 10. Dr. C. E. Bentley of Chicago prepared mesiolingual cavity in upper left cuspid and burnished therein a platinum matrix in which the clinician baked a porcelain inlay. The fit was good, the color good.

Clinic No. 11. Dr. W. O. Vallette of Goshen, Ind., exhibited a neat sterilizer of his own design, in which the instruments are sterilized by boiling.

Clinic No. 12. Dr. G. V. I. Brown of Milwaukee, Wis., showed several cases which he had operated upon at the school previous to the clinic. One of unusual interest was a case of empyemia of the antrum of six years' standing.

Clinic No. 13. Dr. J. W. Erringer of Chicago prepared proximo-occlusal cavity in upper bicuspid and filled with gold, using Pack's cylinders. The finished filling presented a very nice appearance.

Clinic No. 14. Dr. H. H. Schuhmann of Chicago exhibited a porcelain inlay which he had made for a mesial cavity in upper lateral incisor. The inlay was made after the Peck method and was a nice piece of work, both as to fit and color.

Clinic No. 15. Dr. H. E. McDonald of Chicago gave a table clinic.

Clinic No. 16. Dr. F. E. Roach of Chicago exhibited a porcelain crown without band of his design, also ingenious soldering pliers for use in soldering crowns.

Clinic No. 17. Dr. W. H. Dwight of LeMars, Iowa, showed a detachable facing of his own design. The inventor claims for the facing great strength, ease of attachment and removal, and the fact that the facing does not pass through the fire was given great importance.

Clinic No. 18. Dr. C. H. Wambold of Chicago exhibited metal dies and counterdies and the use of Hawl's molding flask.

Clinic No. 19. Dr. C. F. Bryant of Chicago made a partial lower continuous gum case, using the Hammond drop furnace, in which the case was baked.

Clinic No. 20. Dr. H. B. Tileston of Louisville, Ky., made gold inlay for disto-occlusal cavity of lower right second bicuspid. Cavity was prepared so matrix would draw easily, a bite was taken in modeling compound, the impression of the tooth containing the cavity was filled with copper amalgam, which is allowed to set over night. The bite was run full of plaster and placed on articulator. Gold foil was burnished into cavity in the amalgam model of the tooth, then another piece of foil was soldered to the matrix along the line where the matrix covered the gingival margin of the cavity. A small hole was made in matrix for the entrance of solder. Matrix was replaced in cavity and reburnished, then cavity was filled with pellets of cotton, over which was contoured the piece of foil, which had been soldered to the matrix, care being taken to get the contact point with the adjoining tooth, also to get the foil in contact with

the margins of the matrix. Then all was removed, cotton burned out and solder to fill the space inserted. Inlay was then trimmed and set with Harvard cement.

Clinic No. 21. Dr. C. P. Pruyn of Chicago, oral surgery clinic, a case of fracture of the lower jaw of five weeks' standing, fracture occurring on right side just anterior to the third molar. There was much swelling and induration, which made the case very difficult. Swelling and induration were materially reduced by the application for thirty minutes of very hot compresses. Then occlusion was established and the teeth held in proper occlusion by means of wire ligatures, which bound the lower to the upper teeth. Food could be taken, in liquid form, through a tube introduced into the mouth through space on the right side made by the loss of teeth already extracted. This method of reducing such a fracture seemed adapted to this case.

Clinic No. 22. Dr. G. A. Miller of Chicago, clinician, showed a simple and accurate method of making carved cusps for band crowns. Cusp carved in any manner, allowing for thickness of gold. Make counterdie of fusible metal and swage with a plunger.

Clinic No. 23. Dr. Lester Bryant of Chicago formed and carved eight porcelain crowns, six bicuspid, one cuspid and one lateral. Clinician showed much ability in this line, the work being well executed. Used S. S. White's high fusing porcelain and baked in Brophy's gasoline furnace.

Clinic No. 24. Dr. S. M. White of Benton Harbor, Mich., demonstrated a method of preparing and filling diseased root canals.

Clinic No. 25. Dr. Edmund Noyes of Chicago prepared a mesio-incisal cavity in upper left central incisor and filled with cohesive gold, finishing the labial surface and incisal portion of the filling with platinum and gold. The contour, finish and appearance was all that could be wished.

Clinic No. 26. Dr. W. C. Goldbeck of Chicago constructed on plaster models one shell and one open-faced crown, obtaining the measurements for the bands from the models. Contouring pliers alone were used for the work.

Clinic No. 27. Dr. A. G. Johnson of Chicago prepared roots for banded crowns, using instruments of his own design for the removal of the enamel.

Clinic No. 28. Dr. Chas. N. Reese of Chicago constructed a nine-tooth bridge from upper cuspid to second bicuspid on opposite

side. Cuspid an open-faced and bicuspid a shell crown made by Dr. Goldbeck. Dr. Reese backed the facings and soldered bridge, demonstrating a method of his own for backing facings and for placing solder. Clinician used Parr's flux in soldering, dusting case with it while the latter was hot.

Clinic No. 29. Dr. G. B. Stone of Chicago constructed porcelain crowns by a new process, baking them with the Turner gasoline furnace and using S. S. White and Brewster high fusing porcelains. Fusible metal matrix was made over a metal tooth one-sixth larger than the desired crown, this to allow for shrinkage of porcelain. Body was forced into matrix and excess of moisture taken up by blotter. Matrix containing crown was then melted and crown removed and baked. This is a fine method and the clinician's results were very good.

Clinic No. 30. Dr. L. Phillips of Chicago presented a method of making a porcelain-faced crown. Cope made in usual manner, labial side of band made very thin; facing backed with pure gold or platinum and facing waxed in position with cope in place in mouth. Rope of pure gold laid around gingival margin of facing and then investment made and soldering done with 20 or 22 K. solder. Then crown polished, the labial side of band being ground very thin.

Clinic No. 31. Dr. H. O. Browning of Chicago filled an occlusal cavity in upper right first molar, cutting the cavity to include grooves and pits.

Clinic No. 32. Dr. Hart J. Goslee of Chicago exhibited two removable bridges, using the Morgan attachments. The bridges were beautifully constructed and the fit and appearance all that could be desired.

Clinic No. 33. Dr. C. N. Trompen of Roseland, Ill., filled a mesio-occlusal cavity in an upper left first bicuspid, using hand pressure, Vernon's plugger handles and Pack's gold cylinders. The filling presented a very good appearance when finished, both as to contour and density.

Clinic No. 34. Dr. R. C. Brophy of Chicago baked a number of banded porcelain crowns, using a gasoline furnace of his own design. The results were very favorable.

Clinic No. 35. Dr. C. W. Miller of Toledo, Iowa, exhibited pliers to be used for contouring bands for crowns, also for shaping the cusps. The pliers have a number of interchangeable beaks and are of the clinician's design.

Clinic No. 36. Dr. F. H. B. MacDowell of Racine, Wis., demonstrated a method of using and caring for hypodermic needles.

Clinic No. 37. Dr. J. E. Hinkins of Chicago showed a method for the fixation of loose teeth. The teeth were first ligated with continuous ligature, then all was well dried and Kowarski's cement applied to the ligature. When set the cement was trimmed and smoothed.

Clinic No. 38. Dr. Don M. Gallie of Chicago. Gold filling in disto-occlusal cavity in upper left first bicuspid. Cavity prepared at a previous sitting. Cavity filled with Pack's gold pellets, finishing with No. 30 foil. Filling when finished was a beauty. Contour beautiful, contact normal and with restoration of normal interproximal space.

Clinic No. 39. Dr. G. V. Black of Chicago demonstrated to good advantage the use of the separator as an aid in finishing a gold filling on the proximal surface and the use of the finishing files and knives of his own design. These latter instruments are very effective in their work, and once mastered are indispensable.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

THE MEETING OF THE ILLINOIS STATE DENTAL SOCIETY.

The recent meeting of the Illinois State Dental Society at Springfield was a good live meeting in every way. The change from a four days' meeting to three days seemed to be productive of good work during the entire time of the meeting, but it failed to accomplish one reform that had been fondly hoped for. In past years a goodly number of men had been in the habit of coming late and leaving early, thus spending at most three, and in many instances only two days with the society. It was thought that the change from four to three days might keep them in more faithful attendance, but this year there seemed a larger proportion who came late and went early than ever before. It appears to be patent to all that the chief drawing card for a very considerable body of the membership is the clinic, but it is as certainly a fact, borne out by those who have been most faithful in attendance, that the benefits to be gained from the papers and discussions and the professional and social ties that are formed, are as substantial and long lived and have as practical a bearing on success in life as have the clinics. It would seem desirable then if we could keep the members in full attendance from the beginning to the close of the meeting. It has been suggested for this purpose that the clinics be changed so as to be held on the first forenoon and last afternoon of the meeting, but the meeting could scarcely be called open till the preliminary exercises were held, and these should come the first morning. It might be worthy of consideration to hold the clinics the afternoon of the first day and the afternoon of the last day, to see what effect such an arrangement would have on the attendance.

But so far as numbers are concerned there was little cause for complaint at the recent meeting. The sessions were well attended and the interest was sustained throughout. The most encouraging feature of the meeting was the large acquisition to

the membership—more than sixty new members being taken in.

The papers read were of a high character and some of them will undoubtedly mark an era in dental thought, while the discussions were animated and well sustained throughout.

An appropriation of \$1,500 was placed at the disposal of the prosecuting committee representing the National Dental Association, the National Association of Dental Examiners, and the National Association of Dental Faculties, in conjunction with our own State Board of Dental Examiners, for the purpose of suppressing bogus diploma mills and the illegal traffic in degrees.

In view of the onerous duties of the committee on dental art and invention in the way of selecting the articles suitable for presentation before such a society and rejecting the mass of material yearly sent the committee, it was strongly urged by some to abolish the committee entirely, but there seemed to be a sufficient sentiment in favor of having this kind of a report to warrant the continuance of such a committee.

A certain order of the Executive Council passed several years ago has since that time given rise to some dissatisfaction and much misunderstanding, and it would seem well to consider the matter very carefully before it is definitely settled to allow the order to stand as it is.

The order reads as follows:

"Owing to the fact that a number of gentlemen residing in the State, but who are not members of the society, have made it a practice for several years of attending the clinics and crowding about the chairs to the exclusion of our own members, it has been found necessary to debar from the clinic room all but members of the society, or those who have made application for membership, and invited visiting dentists from outside the State."

It is probably true that in the past there has been some abuse along the lines indicated by the order, but in view of the broadest possible philanthropy which such a society should exemplify the writer of this is unalterably opposed to such a regulation. The mission of a dental society should always be to do the greatest good to the greatest number, and if there are men in the profession who are so narrow minded and so lacking in self-respect that they will year after year intrude themselves and accept the benefits of association work without helping in any way to bear its burdens, they are the men of all others who most need the exam-

ple and influence of society effort. If they gain knowledge by attending the meetings and that knowledge enables them to better serve their patients, the association is thereby doing good, and we should never be too squeamish or too particular about the manner in which our good goes forth. As for our own members being crowded out by these men, it hardly seems possible that with the great number of our yearly clinics and the facilities now presented for an adequate observation of them this evil could be of serious import. Let us aim to be broad minded and helpful, even if the object of our help is not always the most worthy, and if in doing so we must thereby suffer some inconvenience ourselves.

Such an order as the foregoing savors too much of the lamented days of exclusiveness in our profession, which at the present time are alluded to only in terms of compassion and regret. We trust that a year's careful consideration of this matter will lead to a rescinding of the order at the next meeting.

THE NATIONAL DENTAL ASSOCIATION.

The coming meeting of this association at Niagara Falls should be well attended by men of the profession from every State in the union and also from Canada. It is eminently the representative association of the profession on this continent and is entitled to the support and fostering care of every man who has the interests of the profession at heart. Distances are great in this country, and this has sometimes militated against as large an attendance as such an organization should draw. But at this particular time there is an era of prosperity which should enable all to attend who sincerely wish to do so.

The profession is judged largely by the character of its associations, national, State and local, and every progressive and enthusiastic dentist should have sufficient pride in his calling to support in every way possible its representative organizations. There is something more than a mere selfish interest to be taken in these things, there is the element of duty which no true man may ignore.

The officers are working hard this year to make the meeting a success, and they should receive the encouragement and loyal assistance of the entire membership. The president of such an

organization has grave responsibility thrust upon him and the workers in the ranks should rally around him and sustain him in every way possible, to the end that each meeting shall mark a decided advance in our professional progress.

Niagara Falls is an ideal place for such a meeting—a fact well demonstrated by previous successes in this line. Let us see that the meeting of 1902 eclipses all former records.

THE EDITOR'S DESK.

A LOVE OF NATURE.

Some day the residents of large cities are going to rebel against the artificiality of the life about them and then there will be an exodus to country homes. At least I hope there will be. It is pathetic to think of the crowding, the jostling, the sweating and swearing of city life. Brick and mortar are useful no doubt, but they are terribly monotonous to look upon. And then we get so far away from nature—we become by degrees artificial in habit, action and thought. We are apt to lose the truest point of view of what constitutes the best and most substantial in life.

A day in the woods, or meadows, or on the river, close to the very heart of nature, does more for the soul of a man than hobnobbing with humanity a week in our city streets. In fact the latter is enough to crush the soul out of him. We must have cities I suppose, but I for one would gladly let other people have the city to themselves at this time of the year if I could get out in the country away from the clang of the cars, the roar of the heavy wagons over cobblestones, the shrieking of the street vendors, the suffocating odors from basements, and the general cauldron of misery into which the heated term usually pitches a large city.

For the professional man particularly it would seem necessary to see something of the quiet moods of nature during a portion of the year in order to keep him in the proper physical and nervous balance. I often envy the country dentist who can go out of an evening after office hours and look at green fields and hedges and clumps of trees, and take a full breath without needing a sieve to keep the soot out of his lungs. I often long to dig

in the dirt and make garden, to trim trees and split wood for an open grate. I would not mind even going down to the pasture for the cows—something I confess I could not see any poetry in as a boy. I suppose my back would get tired—just as it used to—if I was to hoe turnips all day long in July, but I should like to try it.

And I would like to go out to the barn and take care of the horses, and —— but this is getting to be an idle dream, and I must wake up. There is more “copy” to edit yet before bedtime, and that brings me back to the stern realities of life.

BIOGRAPHICAL SKETCH.

JOHN GREENWOOD—SURGEON-DENTIST TO HIS EXCELLENCY,
GEORGE WASHINGTON.

BY BURTON L. THORPE, D. D. S., ST. LOUIS, MISSOURI.



*J. Greenwood Surgeon-Dentist
to his Excellency George Washington
late Pres^t of the U. S. A.
No. 15 opposite the Park New York
near the Theatre.*

The bearers of the name of Greenwood have long been familiar in American dentistry. They were at the profession's inception and did their part to place it on a solid foundation.

The first of the family, Nathaniel Greenwood, by occupation a shipbuilder, emigrated from Norwich, England, arriving at Boston,

1650, where he followed his calling, married and was the father of two sons (Isaac and Samuel) and died 1685.

Isaac was the first professor of mathematics and natural philosophy in Harvard College, and also later in life pastor of the congregation of the famous old North Church of Boston and father of Isaac, Jr., whom Dr. Chapin A. Harris refers to as "the first practical dentist in Boston." He is also credited with being (1750), "a mathematical instrument maker, ivory and wood turner, umbrella manufacturer and dentist, following all these occupations at the same time in Boston." This is quoted from a son of John Greenwood, who received his information, he says, from his Uncle Isaac. He further says: "I presume his practice was confined to the mechanical portion, although in his portrait (large as life), taken some time after this, he is depicted with his left hand and arm resting upon an open volume of 'Hunter's Treatise upon the Human Teeth.'"

A paragraph in an account of the "Boston Massacre" of March 5, 1770, published in the *Boston Gazette and Country Journal* of March 12, 1770, stating that "Samuel Maverick, an apprentice to Mr. Greenwood, ivory turner, received during that unfortunate affair a mortal wound," has been quoted as evidence that Mr. Greenwood was then in dental practice at Boston, on the presumption that the vocation of ivory turner included that of dentist.

To Isaac five sons were born, three of whom, John, Clark and William Pitt, were instructed by their father and followed his calling.

The subject of this sketch was born at Boston, Massachusetts, May 17, 1760. He received a meager common school education at the North School of Boston, until he reached the age of thirteen, when he was apprenticed to learn the trade of cabinet-maker with his uncle, Thales Greenwood, at Portland, Maine. Two years later England declared war against our colonies. A contagion of patriotism swept over the country and each able-bodied colonist who loved home, liberty and free speech, hastened to the front, there to shoulder the musket or seize the sword and give his life, if necessary, on the altar of independence.

Young Greenwood was one of the first to enlist. May 3, 1775, finds him a member of Capt. Theodore Bliss' Co., of the 26th Regiment, as a fifer, enlisted for eight months at eight dollars a month.

At the expiration of the time of his enlistment he continued to follow the fortunes of the army, but was not on the pay roll until he reënlisted, Feb. 13, 1778, in Capt. John Hinkley's company of the command of Major-General Heath, of Boston.

At Bunker Hill, Charleston Mills, with General Isaac Putman; with General Benedict Arnold in his invasion into Canada, fighting the Indians and British, enduring hardships, exposure and dangers without number; with General George Washington, the winter's morning he surprised the Hessians at Trenton, Greenwood was at all times in the thick of the fight doing his duty for the cause he loved.

The day following the battle of Trenton he received three months' pay, and, worn with fatigue and sickness caused from exposure, he concluded to quit the service, although he was promised promotion from fife major to ensign, and assured by his fellow officers that he was the soul and wit of his company, and that he enjoyed their respect and confidence.

After a rest of two or three months, his roving disposition conquers him, and we find him leaving Boston as a midshipman on the privateer "Cumberland," commanded by Commodore Manly, bound for a cruise to the West Indies, with a crew of one hundred and thirty men, carrying eighteen six-pound guns. The sea career of Greenwood as recited by himself in his memoirs (that read like the thrilling tales of Captain Kidd's adventures), which were never finished on account of his sudden death, are flavored with even more daring escapades than was his army career.

While on this cruise, off Barbadoes, the "Cumberland" was pursued and attacked by the British frigate "Pomona," which, after an exciting chase, captured the "Cumberland," put Greenwood and the balance of the crew in irons, and three days later arrived at Barbadoes, where all were imprisoned for five months. Upon release, Greenwood procured passage on a brig bound for Piscataway, where he landed, and was given "a hogshead of molasses to pay my expenses from thence to Boston" by the kindly disposed captain. Hoarding his money, he walked sixty miles to Boston, the home of his parents, where, after recovering from a long and dangerous sickness, he became restless for adventure and again entered the seaman's service, November, 1779, as master-at-arms of a ship that carried one hundred and fifty men and twenty-eight six-pounders, and was mastered by one DePorter, bound for the West Indies.

Off the Island of Jamaica three vessels were captured and carried as prizes to Port-au-Prince, as was also a Spanish pirate schooner, which DePorter manned with part of his crew and placed Greenwood second in command. This vessel captured, as prizes, eleven brigs and sloops, besides one ship of eighteen guns, but soon after, when pursued by British ships, ran on the rocks in Petit Guave harbor, sunk and was lost, with everything on board, save the crew, which escaped.

After numerous trying adventures, destitute and worn with hardship, Greenwood worked his way to New York, where he applied to his brother Clark, then practicing as a dentist in that city. His appeal for aid was in vain. Being refused by his brother, and possessed with a natural mechanical skill, he began business in a small way as a maker of mathematical and nautical instruments. To this business he later added and applied his skill as an ivory turner.

A physician, Dr. Gamage, of New York, asked him to extract a tooth for one of his patients; he was successful in the operation, and this success was the beginning of his professional career. His fame rapidly spread and his services were so much in demand that he employed his brothers, Clark (who had previously refused him assistance when in need), and William Pitt, as assistants.

As his practice increased so did his skill, and he courageously entered the surgical field, and was the first to treat a diseased maxillary sinus by perforating its cavity from the socket of an upper molar tooth and effect its cure.

In cases of abscessed antrum caused by alveolar abscess, to remove the muco-purulent secretion, he used "suds made from tepid soft water and old castile soap."

During his New York residence, Greenwood was called upon to construct for General George Washington full upper and lower dentures, the upper said to be carved from a block of ivory of the tusk of a hippopotamus with the teeth riveted to it with small gold rivets and the lower plate and teeth carved together from a solid block, both dentures being secured by means of spiral springs. At the present time this work would be crude, but Washington, having previously tried other dentists, found Greenwood's work most comfortable compared with the other dentures he had worn. Greenwood in the following letter gives instruction to Washington regarding care of his plates:

"New York, Dec. 28, 1798.

"Sir: I send you enclosed two setts of teeth, one fixed on the old barrs in part, and the sett you sent me from Philadelphia, which, when I received, was very black, occasioned either by your soaking them in port wine, or by your drinking it. Port wine being sour takes off all polish and all acid has a tendency to soften every kind of teeth and bone. Acid is used in coloring every kind of ivory, therefore it is very pernicious to the teeth. I advise you to either take them out after dinner and put them in clean water and put in another sett, or clean them with a brush and some chalk scraped fine. It will absorb the acids which collect from the mouth and preserve them longer—I have found another and better way of using the sealing-wax when holes are eaten in the teeth by acid, etc. First observe and dry the teeth, then take a piece of wax and cut it into small pieces as you think will fill up the whole; then take a large nail or any other piece of iron and heat it hot into the fire, then put your piece of wax into the hole and melt it by means of introducing the point of the nail to it. I have tried it and found it to consolidate, and do better than the other way, and if done proper it will resist the saliva. It will be handier for you to take hold of the nail with small plyers than with tongs thus, the wax must be very small, not bigger than this (*). If your teeth grow black take some chalk and a pine or cedar stick, it will rub off. If you want your teeth more yellow, soak them in broth or pot liquor, but not in tea or acids. Porter is a good thing to color them, and will not hurt but preserve them, but it must not be in the least pricked; you will find I have altered the upper teeth you sent me from Philadelphia. Leaving the enamel on the teeth don't preserve them any longer than if it was off, it only holds the color better, but to preserve them they must be very often changed and cleaned, for whatever attacks them must be repelled as often, or it will gain ground and destroy the work. The two setts I repaired is done on a different plan than when they are done when made entirely new, for the teeth are screwed on the barrs, instead of having the barrs cast red hot on them, which is the reason, I believe, they destroy or dissolve so soon near the barrs.

"Sir, after hoping you will not be obliged to be troubled very soon in the same way, I subscribe myself,

"Your very humble servant,

"JOHN GREENWOOD.

"Sir, the additional charge is fifteen dollars.

"P. S.—I expect next spring to move my family into Connecticut State. If I do I will write and let you know, and whether I give up my present business or not I will, as long as I live, do anything in this way for you if you require it."

In reply Washington writes Greenwood:

"Mount Vernon, 6th Jan., 1799.

"Sir: Your letter of the 28th ult., with the parcel that accompanied it, came safe to hand, and I feel obliged for your attention to my requests, and for the directions you have given me.

"Enclosed you have bank-notes for fifteen dollars, which I shall be glad to hear has got safe to your hands. If you should remove to Connecticut, I should be glad to be advised of it; and to what place, as shall always prefer your services to that of any other, in the line of your present profession. I am, sir,

"Your very humble servant,

"GO. WASHINGTON."

John Greenwood tutored his brother, William Pitt, in ivory turning and dentistry, and William Pitt remained his assistant until 1790, when he located at Salem, Mass., a few years later to remove to Boston, where he continued practice with credit to himself and his profession until his death. He received the honorary degree of Doctor of Dental Surgery from the Baltimore College of Dental Surgery, 1842. He was a skilled carver of ivory and bone dentures and enjoyed an excellent practice.

He attended the meeting of the American Society of Dental Surgeons at Boston, July 19, 1842, and reviewed the profession's growth and development of the past fifty years. It was said of him at that time "that although approaching eighty years of age, his step is still elastic and his mind possessed of the vigor and freshness of youth." He died at Boston, May 10, 1851, on his eighty-fifth birthday.

John Greenwood also was the preceptor of Dr. Horace H. Hayden, who began to study with him in 1804 and whose brilliant career reflected credit and honor to American dentistry.

John Greenwood died at New York from apoplexy, 1815, aged 55 years. His service to "*the Father of his Country*" has given him a lasting fame and his skill and knowledge aided much in broadening and promoting our early professional growth.

DOMESTIC CORRESPONDENCE.

ARTIFICIAL DENTURES.

TO THE EDITOR OF THE DENTAL REVIEW:

A prominent writer in a paper on artificial dentures, in which much theory is elaborated, makes the following statements:

1. "Now it has been the sad experience of dentists that the mere fitting of a plate over an accurate reproduction of the surface of the maxilla will not invariably yield a plate that will stay in position."

2. "I know of none who feel that they can rely upon merely fitting a plate over an anatomically accurate model."

3. "Those opposed to suction chambers declare that alleged success with them is due to their acting as relief chambers."

The writer once told me that he "never put in a denture without a suction chamber that was a success."

Now without any verbiage and theorizing I want to say in reply to statements one and two that such has not been my experience in an exclusive practice of fifty-seven years of inserting artificial dentures but on the other hand, all I ask is a perfect plaster impression and no matter what the shape or condition of the jaw I find no difficulty in securing fit and adhesion provided the plate does not bear on the hard center.

As to the third statement, that suction cavities act as relief chambers it is not true but right the reverse, because the anterior and posterior margins of the chamber rest on the hard center, and sooner or later will rock and displace the plate.

The "relief" should be the thin base plate wax, and extending from near top of the ridge to within about one-quarter inch of the posterior margin of the plate and in width covering the hard center. The margins thin, so as to be undefined.

It does not require any special degree of skill to secure satisfactory results. Many dentists who have read what I have written upon the subject and some who have written to me in regard to difficult cases, tell me that the method secured satisfactory results.

I have made many continuous gum sets for dentists far away, always sending them the plate to try in before completing the work, and they were always pronounced a success.

With me the indispensables to success are a perfect plaster

impression taken in the usual way; a perfect cast from it, shaped so as to drop readily from the mold; the "relief" in place; a babbitt metal die; and seldom needing a second die; the plate made as high as can be worn, and *always* higher over the cuspids than elsewhere, and extending as far back as can be worn; and the teeth articulated so that the plate is not displaced by closure.

In the so-called difficult cases, flat, ridgeless jaws, better results can be secured with metal plates than rubber.

It will be noticed from the above that I have advanced no theories, but have simply given the facts of a long experience.

L. P. HASKELL.

REVIEWS AND ABSTRACTS.

NOTES ON MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS, for Dental Students and Practitioners. By DOUGLAS GABELL, L. R. C. P., M. R. C. S., L. D. S., Assistant Dental Surgeon Royal Dental Hospital, and HAROLD AUSTEN, M. D., B. S. Lond., L. R. C. P., M. R. C. S., L. D. S., Assistant Dental Surgeon Royal Dental Hospital, and Lecturer on Materia Medica in the London School of Dental Surgery. Published by Claudius Ash & Sons, Limited, London. 1902. Pages 248. Price 7 s. 6 d.

The subject matter of this book was originally designed to aid students in preparing for the examination for L. D. S. in England, but a careful perusal will disclose much in it of interest to the general practitioner. In fact it is a most useful book for the library of any dentist. There is a short terse treatment of each subject which is eminently fitting to a work of this character, and the authors seem to have had their task well in hand.

A very complete general index has been compiled—a necessary adjunct to such a book—in addition to which there is a therapeutic index, all of which renders it convenient to refer at once to any drug or any subject.

An appendix has been added treating on filling materials, the cleansing of the mouth, drugs which harmfully affect the teeth, and the restoration of color in devitalized and discolored teeth.

Altogether the work is recommended to dentists as containing much useful information, while the typography and press work is up to the high standard of the house which publishes it.

THE PRINCIPLES OF BACTERIOLOGY. A practical manual of bacteriology for students and physicians. By A. C. ABBOTT, M. D., Professor of Hygiene, University of Pennsylvania. New (sixth) edition, revised and enlarged. In one 12mo volume of 636 pages, with 111 illustrations, of which 26 are colored. Cloth, \$2.75 net. Lea Brothers & Co., publishers. Philadelphia and New York.

This book while designed mostly for medical men has much of interest for those of any calling who are attracted by the study of bacteriology. The treatment of certain phases of this subject is very exhaustive, and the technique of experiments is carefully outlined. This is of great service to those who wish to do practical work in bacteriology. Probably the chapters of most interest to dentists are those on sterilization and disinfection, and the one on infection and immunity. All of the various theories of immunity are treated in considerable detail with a general summing up of conclusions at the end. The subject is, of course, handled from a medical point of view, and the chief discussion relates to the phenomena of infection and immunity within the circulation or within the tissues. What we as dentists are most concerned in at present are the manifestations of susceptibility and immunity in the mouth, but any study of the general subject must appeal to us in its possibilities of throwing additional light on the things we most desire to know.

COLLEGE COMMENCEMENTS.

DEPARTMENT OF DENTISTRY, VANDERBILT UNIVERSITY.

Graduating Class: D. G. Barnett, W. J. Cheatham, G. N. Clarke, Jr., W. S. Crenshaw, G. A. Cullom, E. H. Happel, H. C. Johnson, B. R. King, R. H. Macy, C. M. Newton, J. L. O'Connell, G. L. Powers, G. H. Price, E. W. Sturm, J. B. Thomas, W. T. Townsend, J. C. Turrentine, W. L. Wilcox.

DENTAL DEPARTMENT UNIVERSITY OF OMAHA.

Graduates for 1902: Malcolm A. Akin, Frank Milan Barnes, M. D.; Frank J. Chollette, Edward Peyton Cressler, Otto A. Gsanter, Homer R. Hatfield, Richard C. Houston, Marcus L. King, Glen E. LeMar, Claude P. Lewis, Roy Dana Morris, C. LeRoy Sample, William Lete Shearer, Julius C. Soukup, Albert P. Taylor, Charles R. Trenholm.

The annual commencement of the Medico-Chirurgical College of Philadelphia was held at the Academy of Music, Saturday, May 24, at 12 o'clock,

noon. The degree of doctor of dental surgery was conferred upon the following:

Charles C. Bristow, Herbert T. Birkinshaw, John K. Brallier, B. Frank Campbell, Howard E. Cupitt, Charles E. Dull, David Epstein, M. D., Jacob C. Field, Elmer E. Henry, Ernest C. Halliday, James D. Husted, Martial W. Hayes, William Hayday, Edward Lloyd, Wladimar W. Lutz, Burdetts G. Love, Joseph F. Langlois, Peter A. McAneny, Edward J. Mead, Abraham J. Muchnic, Daniel M. Powers, John J. Russel, J. Joseph Ryle, J. Fenton Sander-son, Imly Sharpe, Samuel S. Smith, Wallace B. Stewart, Albion C. Tollinger, Leslie J. VanDerpool, Warren H. Stover, Conrad J. Weisenburn, Jacob L. Zimmerman.

COLORADO COLLEGE OF DENTAL SURGERY.

The fifteenth annual commencement exercises of the Colorado College of Dental Surgery, Dental Department, University of Denver, were held in Den-ver, Colo., May 19, 1902. List of Graduates: Joao Soares Albergaria, Guy Franklin Baker, William Oliver Brubaker, Walter Thomas Cain, Harry E. Caywood, Atlantic Christensen, Edgar Jay Craine, Edward Xavier Dias, George Whitfield Dowden, Oliver John Graham, Alice Mae Ground, James Martin Hannabs, Normal Neale Wycoff, John James O'Neill, Elijah Fleming Hath-bun, John Coryell Scott, E. Vincent Shadomy, Ernest Ely Yocum, George Millard Smith, Woodford Leroy Tilley, George Frederic Tilton, Lester Chris-topher Wheeler, Walter Hiram White, Herman Lewis Wortman.

SCHOOL OF DENTISTRY, UNIVERSITY OF ILLINOIS.

Class of 1902: Carroll Breed Abbott, Harry Walter Adams, Arthur Eugene Alther, Arthur Levelle Atwood, Louis E. Bake, Arthur Collan Bawden, Henry William B. S. Benson, James Clarence Black, Francis Marion Carl, Walter Paterson Cameron, Rollo Guy Chamberlin, Ernest Grafton Cum-mings, Charles Lyle Daniels, Robert Patterson Donaldson, Aaron Joseph Du-bin, Alfred Henry Fales, Arthur Frederick Flachtemeier, John Clare Granger, Harry White Grubb, David Rector Hawes, Charles William Hillier, William Witbers Homan, Ernest Byron Kelly, Ferdinand Howard Lichtenberg, Frank Raymond Merz, Jay Lee Means, John Maxwell Murphy, John Richard Mur-phy, Robert Johnson McGinnis, Claud DeForest Owens, William Louis Pipkin, Ray Newman Rork, Charles Vernon Rice, Frederick Hayes Ratcliff, Martin Joseph Ruzicka, Charles Hammond Tigner, Devello Eddie Taft, Marie Rose Urbanek, Alvin Sylvester Wasser, William Joseph Walk.

LOUISVILLE COLLEGE OF DENTISTRY—LIST OF GRADUATES FOR 1902.

L. B. McLain, H. Richardson, J. W. Blackburn, A. M. Ericson, S. E. May, R. E. Grant, J. C. Calhoon, I. W. Beauchamp, T. H. Ragatz, Joe Alexander, John Sayle, W. T. Beard, G. E. Mathews, G. T. Smith, C. L. Gabbert, J. T. McIntire, J. C. Beck, B. B. Knolle, W. F. Collings, R. P. Spurlin, W. M. Stringer, T. F. Bates, W. A. Youngberg, C. D. Watkins, G. E. Watkins, G. C. Smith, W. A. Kerley, S. L. Barron, D. C. Blackburn, H. H. Smith, G. H. Kin-caid, A. D. Graham, H. H. Mitchell, E. J. Anderson, A. S. Reese, G. N. Harris, C. M. Butler, T. G. Martin, G. N. Wyman, B. H. Cecil, F. H. Gordon, H. A. Hampton, E. C. Hawkins, A. F. Welcher, A. B. Russ, J. T. Shapinsky, B. W.

Sidebottom, A. Meder, H. G. Mount, J. L. Brock, E. M. Crutchfield, F. E. Smith, O. E. Granger, T. M. Williams, C. S. Grady, C. W. Dorsey, W. H. Dear, C. E. Hoffman, B. M. Stainbrook, W. H. Felder, R. J. Washington, D. W. Seale, J. D. Mitchell, Raymond Reed, T. M. Nicholson, J. D. Meade, W. W. Whitehead, H. E. Seale, H. H. McCullough, T. L. Dailey.

WESTERN DENTAL COLLEGE, KANSAS CITY, MO.

Commencement exercises Wednesday evening, April 30. Graduating class: J. L. Allison, G. W. Boyer, W. H. Burgess, George Burrows, Elwin Cary, T. T. Cater, A. D. Chapman, W. G. Cheney, A. W. Coppersmith, R. S. Coulter, C. W. Davidson, C. O. Davis, Clarence Dicus, M. R. East, G. S. Ewing, D. R. Finley, Ora O. Fouch, W. A. French, W. L. Gemmel, M. W. Gollday, Wes. Grantham, W. O. Halderman, L. M. Hamman, Claude B. Hanks, Loy E. Harris, Joel E. Hawley, John L. Hemley, Hart Holt, H. E. Lancaster, L. D. Leslie, R. S. Love, J. E. Marsteller, Andrew McBride, H. M. McFarland, Otis McMillen, S. P. Miller, H. Z. Moore, C. L. Moore, H. J. Morrison, J. D. Musgrave, A. B. Newland, Gilbert Nichols, C. A. Noland, G. E. Pendarvis, F. A. Phillips, McF. Price, M. N. Putnam, G. N. Raffington, Asa J. Ridgeway, S. B. Riggs, R. J. Rinehart, L. N. Rudy, M. A. Schooley, C. O. Scott, Glenn S. Smalley, J. A. Teague, C. D. Tharp, James L. Thayer, George W. Webb, F. B. Weir, L. E. West, J. F. White, G. M. Wolf, J. P. Woods, W. H. Woods, H. I. Wood.

UNIVERSITY OF BUFFALO, DENTAL DEPARTMENT.

Members of the graduating class, 1902: Dwight Howe Allen, Richard William Barry, Orren Wilson Bates, Arthur DeWitt Becker, George Miller Budlong, Andrew Dexter Cook, Herbert Erastus Cunningham, Frederick Bigelow Dudley, James Roe Dudley, Willard Lee Dutton, John Gibson Elliott, Jesse Lyman Exford, David Fawdrey, De Forest H. Findley, William De Forest Gamble, Frederick Anthony Garvin, Raeside Alexander Germill, William James Graham, Thomas Howard Gray, William Alonzo Griffith, Arthur Stearns Hasbrouck, Frederick Castner Havens, Horace Beals Hawley, Albert Woodsworth Hodges, Eber Little Inman, Ernest Harper Kelsey, Dimmick Enice Lamb, William Henry Leak, George Lewis Leitze, Charles Edward Lewis, James Porter Mallory, Hector Garner Marlatt, John Thomas McIntee, Peter McPherson, Alton DeWitt Mesick, Chester Cole Milne, Clifford Frederick Moll, Hubert Alexander Newton, John Donald Ogden, Floyd Robert Roberts, Sarah Martha Schake, Ernest Edmund Schnitzpahn, Hildegard Eleonore Schottky, Raymond Sylvester Scovil, Henry Adolph Semtner, Harold Reynolds Skinner, Byrd Emory St. John, Earle Sheldon Strong, Edward Louis Sugnet, Herbert Walker A. B. Taylor, Emerson Pomeroy Washburn, Albert Mitchell Wilbor, Norman Trounce Williams, Henry Clay York, Czar Emmons Zeluff.

The following have passed all examinations, completed all college work, and complied with all college requirements. They are in possession of the necessary dental students' certificate from the Regents of the State, but in each case it lacks something of maturity in time, and they cannot by law receive their diplomas until this has expired. Clarence Jacob Ash, Frank Sherman Barons, Thomas Edward Evans, Lawrence William Gallagher, Harlow Reuben Stevenson, William Lewis Tucker, Julian Leslie Weller.

NORTHWESTERN UNIVERSITY DENTAL SCHOOL.

Graduating Class for 1902: Arthur Garfield Adams, Maxwell Sedgwick Allan, Richard John Allison, Josiah William Baker, Emmor S. Bales, Louis L. Ballou, Henry Edward Barber, Clifford Henry Bascombe, Henry Baumgarth, John William Behm, J. Rex Bell, Hugh Thomas Berkey, Joseph Bartley Bilek, Raymond Lee Bixby, Gertrude Richards Bliss, Anna Bailey Blount, Edwin Martin Blumenthal, Ernest Everett Bohrer, George William Bollenbach, Vinton Vazey Bolster, John Lafferty Bond, Frederick John Theo. Borchers, Derward James Boyd, Carl Rudolph Max Brandt, Claude Brant, James Scott Brown, Chester Leslie Burrill, Louis Franklin Bouche, Charles William Bushnell, Wm. Elliott Hughes Caldwell, Joseph Edward Callow, Peter Alexander Campbell, Ralph Sherman Childs, Lewis Paul Colborn, Roy Verner Constable, Plenna Reuben Copple, James Clinton Corbett, B. J. Corbin, William M. Cory, John Rutherford Cromb, Charles Everett Davis, Michael Joseph Dorothy, James Mair Dryden, Thomas Mille Dupuy, Charles David Eaton, Arthur J. Ellis, William Harry Ellis, George Lewis Engel, Frank Edward Fisher, James Clinton Fleming, Charles Gelutiah Foster, Clark Anthony Fuller, Thomas Francis Galligan, Emil Daniel Geiger, Harry Alexander Gilchrist, Mont Rankin Gilchrist, John Hunter Gill, Howard E. Gordon, Edwin Llewellyn Griffith, George Oscar Goodman, Alfred Augustus Guerne, Chauncey Joseph Hadley, Frank Arthur Haffa, T. Devereaux Hall, Roscoe Brant Hammond, Herbert Harold Hancock, John James Hardie, Dr. Sara Harris, Ira Paul Hayes, Wilbur J. Hemphill, Sidney Headley, John Edward Burt Hess, William Herbert Hicks, Jennie Eva Himes, Hugh Wallace Hodge, Herbert Roosevelt Howell, Charles Ray Hoxie, Lewis Hullhorst, Geo. C. Jennings, John Paull Jones, Charles Emil Johnson, Elmo Hiley Kaser, David H. Keller, George Alexander Kennedy, Ronald Bush Kenyon, Joseph Francis Kernan, Curtis John Burwell Kitchen, Louis Christian Kleinecke, Eugene Shofner Landess, Albert Leslie Lane, Herman Lasker, Joseph Simon Lippert, Renaldo Eugene McAllister, Frederick William McCallum, Glenn A. McMaster, Earl Edward McStay, Augustus Bently McVay, Egbert Earl Macpherson, Eugene Maginnis, Wm. Henry Malony, George Angus Matheson, Nellie Ethel Maurer, Frank Alfonzo Michalski, Frank Appelman Meyer, Lewis Mark Miller, Harry Lee Minnis, George Roy Moody, Lorenza Alverado Mullican, Frida Emilie Mueller, Robert Hoyle Munson, William Nelson, Charles Harvey Niswander, John Denis O'Brien, Joseph Segwardt Opland, David Talbott Parkinson, Pearl Parks, Robert Smith Parks, Henry Edward Piner, Oscar Martin Polin, William Myers Pollock, Hardy Fayette Pool, George Corwin Poundstone, Frederick Orion Price, William Orson Proctor, Elmo David Reese, Charles Scott Reichert, William Freeman Richards, Joseph Henry Ritson, Charles Wesley Sanford, John Edward Shill, Abe Lewis Shless, Henry M. Silverberg, Jens Johannes Sinn, Daniel Hallie Smith, George Hill Smith, Edward Albert Spencer, Ernest Arthur Spier, Thomas Henwood Spindlo, William Raymond Stanley, Wirt Allen Stevens, John Francis Stokes, George Orton Swigert, David Ellis Thomas, Edward Smith Thomas, Lewis Edwin Thomas, Edwin Cook Thompson, Ray Leighton Tower, Carl Allen Tucker, Alva Duane Tyler, Stanley John Uglow, Oliver Martin Ulvestad, John Beverly Vaughan, Wil-

liam M. Waddell, Harold Townsend Weaver, William Arnold Weir, Henry Theodore Weyhe, Charles Oren Wilbur, Louis Frederick Wildermuth, Fred Hayes Williams, Leonard Alphonzo Williams, Edwin Ferdinand Wolfe, George Zederbaum, Horace Allen Ziegler, Henry T. Zimmermann.

MEMORANDA.

MINNESOTA STATE DENTAL ASSOCIATION.

The nineteenth annual meeting of the Minnesota State Dental Association will be held at St. Paul, Minn., Sept. 1, 2 and 3, 1902. A cordial invitation is extended to all members of the profession to be present.

GEO. S. TODD, *Secretary*.

Lake City, Minn.

COLORADO STATE DENTAL ASSOCIATION.

The sixteenth annual meeting of the Colorado State Dental Association will be held at the Alta Vista Hotel, Colorado Springs, June 17, 18 and 19.

A good meeting is assured. Special rates at the hotels. A cordial invitation is extended to the profession.

W. A. BRIERLY, *Secretary*.

70 Barth Block, Denver, Colo.

PORCELAIN INLAYS.

Dr. Arthur E. Peck, of Minneapolis, has published a very beautiful little volume descriptive of his method of making porcelain inlays. The work is rich in illustrations, and very tastefully designed in every particular. It is not for general sale, but merely meant as an aid in the use of the author's set of inlay instruments.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

At the annual meeting of the Wisconsin State Board of Dental Examiners, held at Madison, May 13 to 16, the following officers were elected for the ensuing year: President, C. C. Chittenden, Madison, secretary, J. J. Wright, 1218 Wells Building, Milwaukee. The present personnel of the board is: J. J. Wright, Milwaukee; L. L. Leslie, Janesville; E. A. Gatterdam, La Crosse; C. S. McIndoe, Rhinelander; C. C. Chittenden, Madison.

NATIONAL DENTAL ASSOCIATION.

The sixth annual session of the National Dental Association will be held at Niagara Falls, N. Y., July 28-31. A good program is being prepared and all signs indicate a large attendance.

A rate of one fare and a third for the round trip, on certificate plan, has been secured by Dr. Patterson, chairman of the executive committee, on all roads in the United States and part of Canada. Tickets may be bought going July 22 to 29, and holders of certificates may begin return journey as late as August 4.

A. H. PECK.

Recording Secretary.

FUSING PURE GOLD OVER PLATINUM BANDS IN PORCELAIN CROWNS.

Dr. G. H. Henderson, of Springfield, Ill., suggests a method of doing away with the bluish appearance of platinum bands in porcelain crown work in case of a recession of the gum. After the crown is made he places a strip of thirty-six gauge pure gold over the labial portion of the platinum band and fuses it on. This makes a gold plating over the platinum that will never wear off and it presents a more satisfactory appearance than platinum where there is subsequent recession of the gum.

ANOTHER LOVING CUP.

At the recent meeting of the Connecticut State Dental Association a beautiful loving cup was presented by the members of the society to Dr. James McManus, of Hartford. That was truly a noble deed and we all feel more closely drawn to the Connecticut members for their spontaneous recognition of a man who is dearly beloved wherever he is known. We of the West send our greetings to Dr. McManus, with the earnest hope that he may long be spared to lend the influence of his sterling individuality to the betterment of the profession.

CANADIAN DENTAL ASSOCIATION.

The first meeting of the dentists of Canada will be held in Montreal, September 16, 17 and 18, 1902. A National Board of Dental Examiners and a National Dental Association will be organized. Some of the most eminent dentists in America will assist on the program. All dentists are welcome. Dental dealers wishing to make an exhibit will have ample space allotted them by applying to the secretary.

EUDORE DUBEAU, D. D. S.,
396 St. Denis Street,
Montreal, Canada.

A WORD OF CAUTION REGARDING CONTINUOUS GUM WORK.

Dentists are more generally recognizing continuous gum as the ideal denture for full upper cases. It is the strongest, most durable, most natural in appearance, and the only cleanly denture made.

For a certain class of cases (the prominent jaw and short lip), where a porcelain gum is imperative, but very thin, high, and without seams, this work is the *only* method by which perfect results can be secured.

There is no class of work where experience, skill and artistic taste, is more necessary than in this. It must be borne in mind that the strength of this work is in the metal. The porcelain of course adds to it, but is not capable of resisting the strain of mastication.

Unfortunately many dentists are offering to do this work at rates so cheap that it can be done only by sacrificing strength and artistic taste. The plates are made too thin, are not properly reinforced, and there are no metal backings to the teeth, all of which tend to weakness in the work. If this goes on it will result in continuous gum work being brought into disrepute. A strong plea is hereby made to discard these flimsy methods and adhere to those which in the past have proved effective and satisfactory.

L. P. HASKELL.

RECENT PATENTS OF INTEREST TO DENTISTS.

- 697,449. Hydraulic barber chair, Timothy J. Collins, Toledo, Ohio.
 697,983. Artificial denture, Seabird H. B. Cochrane, Canal Winchester, Ohio.
 698,964. Dental articulator, Mathew M. Kerr, Detroit, Mich., assignor to Kerr Dental Manufacturing Company.
 698,997. Dental instrument, Jesse W. McConnell, Cornelia, Ga.
 699,653. Dental vulcanizer, John S. Campbell, London, England.
 696,983. Holder for tooth brushes and tooth powder, Burwell C. H. Simpson and C. F. Crecelius, Falmouth, Ky.
 700,160. Dental mallet, Joseph W. Thatcher, San Francisco, Cal.
 699,776. Dental impression tray, Emory L. Townsend, Los Angeles, Cal.
- Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

DR. HARLAN'S ANNIVERSARY.

On the evening of May 20, Dr. A. W. Harlan entertained the Odontological Society of Chicago, at a dinner at the Athletic Club, and it so happened that the date fell on the thirty-fifth anniversary of his entrance upon the study of dentistry. The especial object of the dinner was to obey an injunction placed on Dr. Harlan by his friends in New York, relative to the beautiful loving cup presented to him by them last January. Their instruction was to have the cup duly christened by his Chicago friends at the earliest opportunity, and Dr. Harlan graciously made the opportunity by this invitation. The evening was one long to be remembered by those present. It was one of those occasions which knit men together and bind them in a bond of common brotherhood. We can assure the New York contingent that the cup was christened, and that if good wishes were wet and the cup were as large as a hogshead, it could not contain all the pleasant things that were said over it. May Dr. Harlan live to see another thirty-fifth anniversary, and may we all be there to help him celebrate it.

THE ADVERTISING BUSINESS.—WHY YOUNG MEN AND YOUNG WOMEN OUGHT TO STUDY IT.

Mr. Charles Austin Bates, the well-known advertising specialist, Vanderbilt Building, New York, says: It is somewhat surprising to the average person to be told that the advertising business is the greatest business in the world. That this is a fact is shown by statistics.

As nearly as it is possible to estimate there are expended for advertising in the United States about \$600,000,000 a year. This is an immense amount of money—a sum whose magnitude can be grasped when it is noted that the entire annual wheat crop of the country is worth but \$319,000,000, the production of pig iron but \$91,000,000, and that all the gold produced in the United States in one year amounts to but \$210,000,000. It has just been pointed out by an eminent authority that the proper handling of this vast amount of advertising money and the proper preparation, making and placing of all kind of advertising offers the most seductive and brilliantly profitable occupation for young men and women.

ILLINOIS STATE DENTAL SOCIETY.

At the annual meeting of this society, held at Springfield, May 13-15, 1902, the following officers were elected for the ensuing year: President, A. H. Peck, Chicago; vice-president, W. E. Holland, Jerseyville; secretary, Hart J. Goslee, Chicago; treasurer, C. N. Johnson, Chicago; librarian, J. T. Cummins, Metropolis. Committee on Science and Literature: G. V. Black, Chicago. Committee on Art and Invention: L. S. Tenney, Chicago. Board of Examiners: C. B. Sawyer, Jacksonville. Committee on Ethics: E. A. Royce, Chicago; G. E. Warren, Pontiac; E. F. Hazell, Springfield. Supervisor of Clinics: C. P. Pruyn, Chicago. Executive Committee: Chas. J. Sowle, Rockford. Members of Executive Council: E. K. Blair, Waverly; D. M. Gallie, Chicago; O. M. Damude, Monmouth. Publication Committee, Hart J. Goslee, chairman; D. M. Catell, G. W. Distmar, Chicago. Local Committee of Arrangements: F. H. McIntosh, J. B. Brown, G. D. Sitherwood, all of Bloomington, which city was selected as the next place of meeting.

ANNOUNCEMENT.

On August 12, immediately preceding the meeting of the Federation, the American Dental Society of Europe will convene. Within the same week the meeting of the International Advisory Boards of the Committee on Foreign Relations of the National Association of Dental Faculties of the United States will meet also. The date of the meeting of the National Dental Association of the United States has been changed to July 28, and the meeting of the National Association of Dental Faculties to July 24, both at Niagara Falls.

The importance of the meetings of the International Commission of Education, attended as it will be by the leading dental educators of Europe, and of the International Advisory Boards of the National Association of Dental Faculties of the United States, cannot be overestimated.

The relations of American dental institutions of learning to similar institutions throughout the world should be better understood, and it will be through the work of these meetings that the most approved methods of teaching at home and abroad will be fully considered and improved.

The action of the societies in both Europe and America in unanimously changing the dates of their meetings, the former having postponed their meeting ten days, while the latter meets eight days earlier than the date fixed last summer, is indeed gratifying to those most active in this great educational movement, as this arrangement of dates will make it possible for those who wish to attend the meetings at home and abroad to do so, besides the action of the societies in changing dates shows the earnest desire of all to promote the interests of dental education throughout the world.

The following questions will be discussed by the International Commission of Education:

First. What preliminary knowledge is necessary for the dental student?

Second. What part of the medical and scientific subjects should be taken up, and at what time of the period of training should the study of them be pursued?

Third. What is the importance of theoretical technical knowledge?

Fourth. What is the importance of practical technical knowledge?

Fifth. What are the most appropriate names for the several titles now used throughout the world?

It is hoped that all who are interested will give this matter immediate and careful attention. The meeting of the National Dental Association in this country, July 28 to 31, makes it necessary that we should sail as soon after this as possible. We have decided upon the "Frederich der Grosse" of the North German Lloyd line, which sails July 31 from New York City. We are due at Bremen August 10. Different priced berths on the steamer may be had, some good ones as low as \$80. These berths will be assigned in the order of registration, twenty-five per cent of which should be mailed at the time of application. The booking arrangements have been made through A. A. Andridge, Ph. D., Pike Opera Building, Cincinnati. Dr. Andridge's experience, rates, time tables, in addition to his private parties, will be at the disposal of any who write. Further questions, in reference to the side trips, extension of tickets, return sailing dates, all remittances, etc., should be sent to Dr. Andridge, while all information about the associations and their work, programs, addresses, etc., should be directed to the president.

By the International Commission of Education:

TRUMAN W. BROPHY, *President*,
Marshall Field Bldg., Chicago.

MAURICE ROY, *Secretary*,
5 Rue Rouget de l'Isle, Paris.

OBITUARY.

DR. ORVILLE E. HILL.

Dr. Orville E. Hill, sixty-nine years old and one of the oldest practicing dentists in Brooklyn, died at his home, No. 160 Clinton Street, Monday, after an illness of several months, from heart disease.

Dr. Hill was one of the most genial of dentists—kind in the extreme. His influence at Albany has done much to secure legislation in favor of a better dental education. His post-prandial ability was in demand at all gatherings of dentists. He was most active in all associate efforts, as far as our local and State societies were concerned, although he never seemed inclined to the national bodies. His social nature made him many friends, and while he was sometimes unkindly dealt with in debate, yet his disposition was always for a charitable adjustment.

His tastes were refined, as his unusual collection of paintings, bric-a-brac and curios testify. If sold they will bring a snug fortune.

Dr. Hill will be much missed.

June 4, 1902.

G. ALDEN MILLS.

DR. CASSIUS M. RICHMOND.

There is perhaps no name more widely known than the above, throughout the calling of dentistry. The name of "Richmond crown" will with its author be counted in the history of the profession.

We think all right minded practitioners will agree, that the advent of this crown has caused a marked departure in the application of artificial substitutes for natural teeth. Never has any invention produced so radical a change in practice as the introduction of crown and bridge work, first the crown and then the bridge. Setting aside all former prejudices and associations concerning this advance step, it is pronounced as second to none, considered from a practical point of view. This is the verdict of our most progressive practitioners.

This work has not only been an advance practically, but it has raised the standard of appreciation for a higher grade of service. The author of this useful branch of dentistry has passed from our midst, leaving to his memory a harvest of fertile inventions; and we do little, when we speak kindly of him. His generosity was manifested in a multiplicity of ways to his fellow practitioners. His home was always open, and as we often say, "He was generous to a fault."

Dr. Richmond has had a distinguished clientele from every known department of the world, and his popularity among those patrons was cordial to an extreme.

It is but a meager notice that we can extend of our departing fellow-practitioners. They are dropping out rapidly, and as it was truly said by Dr. Jarvie at a late meeting of the Odontological Society of New York City, referring to the "Workers of Dentistry," so interestingly exhibited through the stereopticon by Dr. Charles McManus, that we cannot be too faithful in gathering up the fertile, historical men, and facts, that go to make up a more perfect record of our doings. We believe that what we have accorded to our deceased co-worker will be gratefully assented to, and give him a place among our more than ordinarily useful practitioners.

G. ALDEN MILLS,

New York City.

May 16, 1902.



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ORIGINAL COMMUNICATIONS.

THE POWER OF ASSOCIATION.*

BY DR. JONATHAN TAFT, CINCINNATI, OHIO.

Never in the history of the world has there been so great a tendency to bring together the forces of nature and make them operative for the accomplishment of great achievements as now. The objects to be accomplished by such aggregations are various. This is in a marked degree true in regard to mankind: not only is this true of men everywhere, but of the lower orders of living beings. The larger number of the animal creation live in companies, herds, flocks, etc. Some in large numbers and others in less, as the conditions in which they exist may require. Not only do the beasts live in associations, but the birds of the air and the fish of the sea and the insects as well. We will not here and now attempt to give the reason for nor an explanation of this almost universal tendency to aggregation on the part of the animal kingdom further than to say it is for the accomplishment of purposes that could not be reached except in this aggregated state. In the career of our race men have associated themselves together for a great variety of purposes. *In cities* for commerce, self-protection, social life and mutual helpfulness. *Into armies*, for self-defense, the protection of rights, the punishment of enemies and the attainment of spoils. In the human family the matter of association has been carried to a degree of accomplishment that is not to be found elsewhere.

In nearly every department of human occupation united or combined effort is the order; indeed, in many directions but little can be done without it. *The men of wealth* form their associations for commercial purposes and as a means of increasing their posses-

*Read at the first annual clinic, School of Dentistry, University of Illinois, March 26, 1902.

sions. *Those without wealth* unite in communities or bodies in order that they may the more successfully resist and overcome dangers that are present or prospective. All associative efforts are established and brought into operation because of some real or supposed benefit to be derived therefrom, and this oftentimes irrespective of the kind of benefit. It may be *financial, commercial, honorary, political, religious, scientific or social*.

We will now give attention for a few moments to the organization of dental association work and note, if we may, somewhat of its influence upon the various agencies that have been instrumental in the development and growth of dental science and art in this country.

For two or three years prior to 1840 Dr. Horace H. Hayden, of Baltimore, became greatly interested in the idea of a dental association. He spent much time in traveling, visiting and corresponding with his professional brethren throughout the country in reference to the formation of a dental society. He was enthusiastic in his effort in behalf of this object. It seems that but few members of the profession had been giving any thought to this question. When the formation of a society was first suggested it was scouted by many as impracticable. Various objections were raised and unexpected obstacles thrown in the way. One was unwilling to impart from his store of knowledge, which he gave himself credit of possessing, to the others of the profession of merely creditable pretensions. "A community of knowledge? Oh, no!" says another, "I can never consent to that." A third says, "I am no society man," and a fourth objects on the ground "that it would be likely to bring him into contact with those whom he supposed occupied a less lofty place in the temple of professional fame than that he had attained." As for being benefited himself by an interchange of views, the idea was not to be thought of. It was preposterous. He had already drank too deeply from the fountain of knowledge to learn more, and was unwilling to bestow any part of his choice and invaluable treasure upon others.

Thus it will be seen that, as this subject was projected, and chiefly by Dr. Hayden, there was quite a variety of views and dispositions in regard to it. Some were aggressively opposed, others were quietly opposed; others were totally indifferent, while others were mildly favorable. Still others, a small per cent, however, were enthusiastic for the organization. The society was formed and its

chief projector was Dr. Hayden, who was elected its first president. This subject is one that had long been considered by him, he having been a member of the profession for forty-three years, and as a man of science and an eminent practitioner none stood higher, either in this or any other country. However distinguished a reputation he may have gained as a dental practitioner or as a man of science, the carrying into successful operation of this enterprise will secure to him a fame that will outlive and outshine even that. When he will have been forgotten as a dental practitioner he will be remembered by his professional brethren as the "*Father of the American Society of Dental Surgeons.*" Prominently connected with the society also are the names of other distinguished men, those of Harris, Flagg, E. Parmly, Gardette, Solyman Brown, Harrington, Baker, J. Smith Dodge and others that will never be forgotten.

This was not a delegated body, but those desiring to become members presented their applications or came by invitation. The qualifications of proposed members were well known, or investigation was had for determining their fitness.

There were fifteen persons actively present at the organization. Two were present by proxy, thirteen by letter and twelve by invitation, making the whole number especially interested in the organization less than fifty. The objects of the society, as stated in the constitution, are to promote union and harmony among all respectable and well-informed dental surgeons, to advance the science by free communication and interchange of sentiments, either written or verbal, between members of the society, both in this and other countries; in fine, to give character and respectability to the profession by establishing a line of distinction between the truly meritorious and skillful and such as riot in the ill-gotten fruit of unblushing impudence and empiricism.

Name—The American Society of Dental Surgeons.

Requisition of membership—Each and every acting member of this society shall either have been such by virtue of his attendance in person or by proxy, or by letter, at the time of its organization or as shall be afterward elected as prescribed by this constitution, and subscribe to the same.

Each and every acting member shall be required to attend the society at least once in three years, unless excused by the society.

This was the pioneer in association work in the dental profession. Prior to it two efforts were made to establish local societies,

but without any apparent results, one in New York city and the other in Virginia. This association demonstrated quite fully points attainable by associative effort, and as clearly indicated some points of danger that should ever after be avoided. In both of these respects it accomplished a valuable service. After a varied career of sixteen years it was disbanded and has left a record that will never be forgotten so long as the profession shall maintain a distinctive name and individuality.

The American Dental Convention.—This body was organized in Philadelphia, August 2, 1855, in pursuance of a call of about sixty dentists.

The American Dental Convention was formed with a view to a more popular and less restrictive body than the American Society of Dental Surgeons, not, however, for the purpose of antagonizing the latter. In specifying the objects of the convention the second article of the constitution says: "The convention is intended to promote professional and personal intercourse among those who are engaged in the cultivation and practice of dentistry throughout the world; to advance the cause of dental education, and systematize and strengthen the efforts of its friends, and mutual interchange of opinions and experiences, to advance the knowledge and liberalize the relations of the members." Article third says: "The convention shall consist of the members or of those who shall sign these articles of association, and of such other practitioners of dentistry and auxiliary branches of science as shall hereafter be elected for membership and sign these articles."

Article four says: "Candidates for membership shall be nominated by a member of this convention, at any of its meetings, and every such candidate as shall receive a majority of the votes cast upon the question of his admission shall be declared duly admitted."

Article five says: "This convention shall be held once every year on such day and at such place as the convention shall at each session appoint for the next meeting."

The principal promoters of this organization were men who stood high in the profession. The following are the names of those who were the more enthusiastic and active in forming the convention: Elisha Townsend, of Philadelphia; Dr. W. H. Goddard, of Louisville, Ky.; Dr. W. H. Dwinell, of New York; Dr. S. P. Miller, of Wooster, Mass.; Dr. Potter, of Connecticut; Dr. Bonsall, of Ohio; Dr. C. O. Cone, of Maryland; Dr. J. S. Clark,

of New Orleans; Dr. Munson, of the District of Columbia; Dr. Garrett, of Delaware; Dr. A. C. Hawes, of New York; Dr. J. G. Cameron, of Ohio; Dr. Marshall, of New Jersey; Dr. Chapin A. Harris, of Baltimore; Dr. Jas. Taylor of Cincinnati, Ohio.

This convention was especially efficient in the promotion and extension of social results. Many close and lasting acquaintances and friendships were formed during its career. Men who had never met or even heard each other's names were through the agency of this body brought into close companionship and in many respects became professionally helpful to each other. Indeed, the character of the convention and the reputation it attained were such as to draw men of the more congenial natures to each other.

During the career of this body quite a large number of excellent papers were read and, in the main, thoroughly discussed. This convention rounded out a career useful and valuable and was disbanded in the year 1874.

The American Dental Association was organized at Niagara Falls August 3, 1859. Dr. W. W. Allport of Chicago was chosen chairman and J. Taft of Cincinnati secretary. The call for this meeting was as follows: "The undersigned practitioners of dentistry, believing that a National Association of Dentists composed of delegates from State, county and local societies and dental colleges would be calculated to promote the best interests of the profession, respectfully suggest to the dental societies and colleges throughout the country the propriety of electing delegates to meet in convention at the Falls of Niagara on the first Wednesday of August, 1859, for the purpose of forming, if the assembled delegates shall deem it expedient, a National Association upon a representative basis." Drs. James Taylor, W. M. Wright and J. L. Suesserott were appointed a committee of three to examine and report on credentials. Upon examination the following persons were found to be duly authorized delegates and present:

Mississippi Valley Dental Association—S. L. Hamlin, H. McCullum.

Ohio Dental Association—H. A. Smith, Jos. Richardson, J. T. Toland, J. Taft, G. W. Keely, Geo. Watt, E. Taylor.

Pennsylvania College of Dental Surgeons—Wm. Calvert.

Western Dental Association—D. W. Perkins, W. W. Allport.

Pennsylvania Association of Dental Surgeons—J. H. McQuillen, J. L. Suesserott, T. L. Buckingham, Geo. T. Barker.

Indiana State Dental Association.—J. F. Johnston, A. M. Moore, P. G. C. Hunt.

St. Louis Dental Association—H. J. McKellops, I. Forbes.

Pittsburg Dental Association—W. M. Wright, R. Vandervort.

Cincinnati Dental Association—C. H. James, J. G. Carmeron.

Ohio Dental College—James Taylor.

The following was then offered by Dr. J. H. McQuillen of Philadelphia: "Resolved, That a committee, composed of one member from each delegation present, be appointed to draft a constitution and submit the same to the convention, its final adoption to be left until the next annual meeting."

Several amendments were offered, but the original resolution prevailed, with a slight modification, moved by Dr. J. F. Johnston of Indiana that the committee should consist of three members. Drs. J. H. McQuillen, Wm. M. Wright of Pittsburg and Jos. Richardson of Cincinnati were appointed the committee.

The delegates met according to adjournment. The committee on constitution for the proposed association was called upon and reported, after which the report was read. On motion,

"Resolved, That this association holds its next meeting in Washington City on the last Tuesday in July, 1860, at 12 m." On motion,

"Resolved, That this association suggest to the dental practitioners residing in sections of the country where there are no local or state societies the propriety of forming such association and electing delegates to meet this convention at its next meeting."

On motion of Dr. Taft:

"Resolved, That five persons be appointed by the chairman to prepare essays to be read at the next meeting."

Adjourned to meet at Washington City, D. C., on the last Tuesday of July, 1860.

J. TAFT, Sec.

EXTRACTS FROM CONSTITUTION.

ARTICLE II.—OBJECTS.

The objects of this association shall be to cultivate the science and art of dentistry and all its collateral branches, to elevate and sustain the professional character of dentists, to promote among them mutual improvement, social intercourse and good feeling, and to collectively represent and have cognizance of the common interests of the dental profession in every part of the United States.

ARTICLE III.—MEMBERS.

Section I.—The members of this association shall be exclusively

practitioners of dentistry, holding their appointment to membership either as delegates from local institutions or as permanent members.

Section 2.—The delegates shall receive their appointment from permanently organized dental societies and dental colleges in the Union, each delegate holding his appointment for one year.

Section 3.—Each local society shall be entitled to send to the association one delegate from every five of its active members, and the faculty of each college to send one of its members as representative.

The work of the association is in the main accomplished through a series of committees appointed annually, as follows: (1) The Committee of Arrangements. (2) The Committee of Publication. (3) The Committee on Prize Essays. (4) The Committee on Dental Physiology and Dental Chemistry. (5) The Committee on Dental Pathology and Surgery. (6) The Committee on Mechanical Dentistry. (7) The Committee on Dental Education and Dental Literature.

In 1897 the American Dental Association held its meeting at Old Point Comfort, August 3. The matter of reorganization and union with the Southern Dental Association and revision of the constitution was taken up. The union of the two bodies was consummated very satisfactorily. The constitution was changed and amended in various particulars. Many things were eliminated that had become more or less obsolete, and many other points amended to make them more in harmony with and better adapted to conditions that now prevail.

To enumerate all the important work accomplished by the Dental Association in its career would be impracticable, or even to give a résumé of it. A few things may, however, be mentioned. As its name indicated, it was in the best sense a national institution. Its membership is drawn from all parts of our country. Being a delegated body, it was in touch with every subordinate body in the country, and over these it exercised a fostering and inspiring helpfulness. About 1875 a committee was appointed, whose duty it was to organize dental societies wherever practicable; to visit and strengthen the weak and to encourage and incite all to more energetic action. Many new societies were organized and feeble ones strengthened under this arrangement. Our educational institutions were helped, strengthened greatly by dental societies, and especially by the one now under consideration. It was ever ready to commend

and encourage every movement in the line of progress. It was ever ready to advise as to modes of procedure whenever occasion called for it. There was never decidedly an advanced step made in the way of advance that did not meet the hearty approval and support of this body.

The literature of the dental profession, especially the journalistic department, would never have attained its present proportions without the aid of our dental societies. Take away from our literature all that has come to it through society work and it would be largely shorn of its present very efficient position. About the year 1869 the American Dental Association adopted a code of ethics for the regulation of professional conduct. This for the benefit not only of the active members of the association, but for the members of all societies represented in the body. No local or State societies were permitted to send delegates without first having adopted this code of ethics. The influence of this requirement cannot be estimated or fully appreciated. It is an influence that has reached not only every State and local dental association of this country, but it has influenced for good, to a greater or less degree, thousands of practitioners who have never allied themselves to society work. The adoption of this code by State and local societies conferred no power to make its application general. This ability, however, the American Association did possess, and also the courage to exercise it. No society, either State or local or individual, who desired to be in harmonious relation and full sympathy with the profession could refuse to acquiesce in this requirement. This association, from almost the beginning of its career, not only gave attention to the scientific aspect of practice, but to the artistic and clinical as well.

Clinics have been held under its auspices at almost every meeting, which resulted in inestimable value to the members.

At the meeting at Old Point Comfort, for reorganization, the name was changed to that of National Dental Association. In amending the constitution all the good things contained in it were retained and some of them, at least, emphasized.

In the rules for order in the new constitution is the following:

"Resolved, That this association now in session direct that sections belonging thereto shall in the future be prohibited from inviting individuals who are violating the code of ethics to hold clinics or to give other exhibitions before this body."

At the first meeting of the reorganized body the following was adopted:

"Resolved, That a committee of three be appointed, whose duty it shall be to confer with State and local societies and to aid and foster new societies when and where desirable." At this first meeting, also, twelve standing resolutions were adopted, each of which pertains to aggressive work by the association. The work thus far referred to as accomplished, under its former and present regulations, constitutes only a small part of that which has been done by it for the advancement of the material interests of the profession.

Another association which we cannot forbear to mention is the National Association of Dental Faculties. This organization was brought into existence August 4, 1884, in New York city. Its object, as then declared, being the bringing about the adoption of a uniform standard of graduation. The following colleges were represented—viz.:

Baltimore College of Dental Surgery—R. B. Winder and M. W. Foster.

Boston Dental College—J. A. Follett and A. N. Blodgett.

Chicago College of Dental Surgery—A. W. Harlan and F. H. Gardiner.

Harvard University, Dental Department—Thos. Fillebrown.

Dental Department, State University of Iowa—A. O. Hunt.

New York College of Dentistry—Frank Abbott and J. B. Littig.

Dental College of the University of Michigan—J. Taft.

Ohio College of Dental Surgery—H. A. Smith.

Pennsylvania College of Dental Surgery—C. N. Peirce, and Henry Leffmann.

Philadelphia Dental College—J. E. Garretson, S. H. Guilford.

University of Pennsylvania, Dental Department—Jas. Truman, E. T. Darby.

Letters were also received from the Deans of the Kansas City Dental College and the University of California, Dental Department, endorsing the object of the meeting and pledging their support to the movement.

Article 2 of the Constitution, as adopted, declares that the object of this association shall be to promote the interest of dental education. The following resolution in regard to new members declares that any dental college, which desires to join the association, between the annual meetings, may be enrolled upon sending its applica-

tion to the Committee on Membership, accompanied by satisfactory evidence that it has complied with the rules and regulations of the association and paying assessments.

Dr. C. N. Peirce was chosen the first president. Up to this period most of the colleges in the country accepted five years' practice as the equivalent of a first course of lectures. Dr. James Truman moved that after the close of the session of 1884 and 1885 students at the dental colleges be required to attend two full regular courses of lectures before coming up for graduation. This was adopted.

"Resolved, That we recommend that three years' study of dentistry, including an attendance upon two regular courses of lectures be required of students, previous to coming forward for graduation from a dental college."

The volume of proceedings of this body from its inauguration to the present time is one of exceeding interest. It influences the profession in a manner very different from any organization that has been considered in this paper. Those, to which attention has been given, have reference to and were intended to influence those already in the practice of dentistry, and for their benefit mainly. The work of the National Association of Dental Faculties had for its prerogative, the proper training and education of those proposing practicing dentistry as a life work, and giving little or no attention to those already in practice, so that its work was for the future, rather than for the present.

Steps of progress were made at every meeting of the association from its beginning to the present time. Prior to this organization no entrance requirements had been enforced by the large majority of colleges then in operation. This requirement was one of the first movements by the body; it is a question that received more or less of attention at every meeting of the body. The curriculum has received earnest consideration at nearly every meeting. The length of course for graduation was, at the beginning of this body by nearly all the colleges, two years of four months each. This time has been lengthened to three years of seven months each for graduation, and this has been increased to four years, to go into effect October, 1903.

The requirements of this association have been rigorously enforced. Quite a number of cases of discipline, for violation of rules, have come before the body, and were always adjusted with reference

to the best interests of the association, of the profession and the public.

Another society, viz., "The National School of Dental Technics" (now Dental Pedagogics) was organized in Chicago, 1893. This was declared to be a movement for systematic teaching of dental technics, suggested by Dr. G. V. Black. This was a movement in behalf of dental college work which was greatly needed. The suggestion was made, and for a time advocated, to establish this work as a department of the National Association of Dental Faculties. This, however, after due consideration, was regarded as impracticable, hence the establishment of the School of Dental Technics. This work has been growing in importance and efficiency each year since its inauguration. Its membership now consists of representatives from twenty-two dental colleges, the number increasing each year. The work already accomplished by this body is prophetic of large things in the future, and doubtless, ere long, our colleges will all find it important and even necessary to take part in this work.

Another organization that has exercised a great influence for good to the profession, and the public as well, is that of the "National Association of the State Boards of Dental Examiners." This body is composed of representatives from the "State Boards of Dental Examiners," which have for their function the carrying out of the requirements of the different State laws regulating the practice of dentistry. This central body has done much in the way of unifying, and making more effective the work of the State boards. In this connection it seems necessary that some reference be made to the influence exercised by State dental societies. The organization of the first State Dental Society was by Virginia, December 12, 1842. The Mississippi Valley Association, though not a State body, was organized August 8, 1844. The Pennsylvania Association of Dental Surgeons was organized December 14, 1845. The Society of Dental Surgeons of the State of New York, November 17, 1845. The State societies of Pennsylvania and New York were not incorporated until 1868, and Virginia in 1890. The Ohio State Dental Association in 1866.

State and local organizations were from this period on established in rapid succession. Now almost every State in the Union has its dental society. In some respects there is no more important work in the profession than that of the State society. It exercises a healthy influence upon local societies. It is by the direct work and influence

of State organizations that laws for the regulation of dental practice have been enacted, and in the main, executed. It is impossible to even proximately estimate the results of these State bodies. Our State societies, while looking to legal affairs, accomplish other work as well. They are and always have been the mainstay and support of the American Dental Association. Some of the best scientific work done in our profession has been by some of the State societies. They also engage in clinical work, surgical, operative and prosthetic as well.

PYORRHOEA ALVEOLARIS AND PREHISTORIC MAN.*

BY L. L. DAVIS, D. D. S., CHICAGO, ILL.

Anything connected with the prehistoric people of this country cannot but awaken our curiosity and attract our attention. Some time since a friend of mine interested in archeology and geology mentioned having in his possession some very perfect specimens of the teeth of mound builders that he would like me to see. I availed myself of the invitation and also the opportunity and to-night present them for your inspection and judgment. My acquaintance with this period in the world's history is not very great or extensive, so it would be useless for me to enter into detail regarding this early race, but in order to grasp more fully the point of interest from a dental standpoint, that I wish to make, some little idea of the deductions of geologists and others who have made this study their life work will surely not be out of place.

The mound builders' age has been assigned no specific date, but covers many epochs. Following the paleolithic age we have the neolithic, which includes mound builders, cliff dwellers and Pueblos, civilized races of Mexico and Central America, and the aborigines.

The mound builders were the first people who occupied territory after the close of the glacial period; they were contemporaneous with the mastodon, the interval between the glacial period and the appearance of the mound builders being called the age of the mastodon, this overlapping the mound builders' age. The territory occupied by them extended north and south from the Red River valley to the Florida coast, and east and west from the Allegheny Mountains to the foothills of the Rockies.

*President's annual address before the Odontological Society of Chicago, November, 1901.

The antiquity of these people has been estimated at about 5,000 years, but on account of the custom of using mounds for purpose of interment passing down the ages, and possibly extending to a time not many centuries remote, at least only a short time before the appearance of the white race on this continent, no exact date can be set, the presence of metal, as bronze ornaments, etc., only show a later period than the earlier stone age.

As to the time elapsed since these specimens of dental organs of a departed people were in use, it may be safely computed as equal to or greater than the Anno Domini of this era.

They were found in a mound in this State on the west bank of the Illinois River, near Beardstown, together with many beautiful specimens of the stone age. No metals of any kind were found in this mound.

The first specimens are those of a young person, as shown by the undeveloped roots. Mark the beautiful contour and ideal shape of these teeth. Only within the last few hours one or two of these have been defaced by careless handling, so I ask your consideration in looking them over. The size, shape and texture of these teeth indicate a race not yet spoiled by the influence of civilization. It is fair to presume that candy was an unknown article of diet at the time this child roamed the valley of Illinois. There is nothing remarkable about these specimens except their state of preservation.

The next specimens are those of a much older person, as indicated by the attrition they have been subjected to. That this person was well advanced in age is very clearly shown, and again the condition of these teeth prove that the ravages of caries and other attendant ills of civilized life were wanting. Their usage, shape and general texture would indicate a coarse diet, a strong frame and power to assimilate the food at hand. Dyspepsia probably never troubled this person, in fact from infancy to old age the teeth gave him little trouble. And yet there is indication here of a disease that has been ascribed to many causes that has been the fruitful source of many beautiful theories, and yet at the present time is still the subject of the best efforts of our best men to elucidate its etiology, viz., pyorrhoea alveolaris.

The presence of a calcic deposit upon the roots of some of the teeth of a being so far removed from the influences that so many theorists consider as a prime factor of the disease must necessarily upset their deductions. Gout is without doubt one of the diseases

due to luxurious living, and that was surely not the cause of trouble here. The total absence of any indication of salivary calculus should presume the absence of any rheumatic affection as the cause, for to have a deposit of an excess of lime salts *within* the tissues, carries with it also the excess of lime salts in the saliva. That vigorous use, or its substitute, *massage*, was wanting cannot be said of these teeth. Some of them have been loose for quite a time as the approximating sides will disclose upon careful observation. Whatever is the cause of pyorrhoea alveolaris in the present day was the cause in this case thousands of years ago. What that cause is I am still looking for, and it is with the desire to learn more on this subject that I offer this brief article and these interesting specimens.

CARE, PREPARATION AND CONDENSATION OF COHESIVE GOLD IN A CAVITY.*

•BY D. M. CATTELL, D. D. S., CHICAGO.

Gold to the dentist is as the red mantle to the bull—it causes excitement. The majority become enraged because they cannot get close enough to hook it. Some seem not to master it, but rather to become entangled and dazed with its glitter. Others corral and subdue it, prove perfect masters in the art of conquering, after which they allow it to float away as golden clouds at an autumnal sunset. Few there be who enjoy it, understand it, make it obey their commands, and yet keep it with them always. The poor we have, but gold is secured only by much dickering.

The gold used in operative procedures is found on the market in two forms—foil and crystal.

Gold foil or leaf is cut in squares 4 by 4 inches, of varying weights or thickness from two to twenty grains to the leaf. For special purposes some foil is made to weigh forty to eighty or even 120 grains to the leaf. With the lighter foil form the operator prepares the gold for insertion in a cavity into rolls, pellets, or ribbons. Also very thin sheets of foil are rolled into cylinders of varying sizes by machinery and cut into certain lengths, to be easily manipulated in the process of filling. Again, thin sheets of foil are laid together until the required thickness is attained, then cut into pellets or blocks in sizes or shapes to suit the operator's convenience.

In the *crystal* form the gold is dissolved by means of chemicals,

*Read before the Chicago Dental Society.

usually aided by electric action, and allowed to participate into a crystalline mass.

I believe it is a safe proposition to say that all metals, when *pure*, are cohesive—that is, when two pieces or surfaces of the same metal come into exact contact, they will cohere or weld together—become part and parcel of each other. Most of the metals, however, very soon become changed on their exposed surfaces—impurities spread over and become adhered thereto, so the surfaces of the metal cannot come into exact contact until this impurity has been removed. Gold is cohesive in a marked degree, that is, clean surfaces of gold placed into juxtaposition weld readily in the absence of heat. Yet, with all its cohesive properties so dominant, it easily becomes non-cohesive, owing to the readiness with which it absorbs gases or takes to its surface impurities. By the fact that gold fuses only at a high temperature, it allows of sufficient heat to vaporize most of the impurities that are likely to come in contact with it.

All gold used for filling cavities in teeth which is kept in the dental operatory is liable to come into contact with certain gases that neither wooden drawers, pasteboard boxes or paper books will prevent.

Carbon dioxide, oxygen, hydrogen, chlorine, sulphur, phosphorous and ammonia are probably the more common. The *volatilization* of a condensed film of carbonic acid gas on the surface of gold is all but impossible. Even oxygen and hydrogen are difficult to volatilize by heat when condensed on a gold surface. Indeed, all the gases mentioned are somewhat difficult to get rid of when allowed to play havoc with gold, with the exception of ammonia or any of its combinations, which are easily volatilized. Ammonia has great affinity for other gases and if found in their presence a salt of ammonia will be formed, which is readily removed by annealing. Therefore, the gold drawer should be supplied with an atmosphere of ammonia at all times, in order to insure a volatilizable film on the surface of the gold, whether it be in beaten leaves lying between squares of paper, rolls or pellets secured in pasteboard boxes, or the crystalline forms put up in either pasteboard or wooden cases.

Gold is annealed, primarily, to burn off or volatilize any film of gas that may have collected on it, and thus purify the surfaces, so that when brought into contact they will cohere or weld together readily. Secondarily, the annealing tends to soften the gold, mak-

ing it work to better advantage under the condensing plugger. If the gold is annealed in a spirit flame, it should be brought to a red glow for a moment only, and the alcohol should be 95 proof. A lower proof or wood alcohol will not give the best results. If the gas flame from a Bunsen burner is used, care must be taken that full combustion of the gas occurs, else a deposit of carbon on the gold will result. A better way is to lay the gold on a mica board placed over the flame and held in position by a suitable frame. By this method the gold is not heated so hot as when placed directly in the flame, but much more time is allowed in which to vaporize the impurities. In this the time element is of considerable importance. Best of all the methods at present known, however, is to anneal with electrically heated trays holding the gold. The heat is more evenly distributed over the plane of the tray, and the amount of heat is more easily regulated. The gold should be carried to the cavity immediately from the annealing tray or plane with a gold carrier, used only for that purpose, so the gold may not be needlessly injured by using pliers or other instruments that had been previously soiled with medicaments, blood or other filth. If the gold is annealed in a flame and carried by pliers, the piece should be laid down in the gold tray or box, and again picked up at another point and repassed through the flame, so that the portion of gold formerly held between the beaks of the pliers can become thoroughly annealed, or the filling will have points here and there throughout its mass of uncohered particles; especially should this be looked after in contour building.

The spreading properties of gold are so well known that it seems scarcely worth while to dwell upon them, yet there are many dentists who fail to take advantage of the well-known characteristic in operative procedures. A mechanic understands the value of a convex face on one end of his hammer-head when riveting a bolt or spreading a metal plate. The dentist in his laboratory knows how to take advantage of the spreading property of gold in swaging a plate around a remaining tooth, or over the heel of the process, or if he has made a crown band too small it is readily stretched by laying over the convex surface of a projection from the anvil and tapping with a flat-faced hammer, thereby spreading portions of the mass. The gold beater depends upon the convexity of his hammer as he beats the gold leaf to spread it in the velum catch or molds from an inch square to the usual four-inch square size. In-

deed, the malleability of gold seems to be well understood by our profession in every department of constructive work, except operative procedures at the chair. If search be made through the pluggers of the supply houses, but very few will be found whose impacting points are other than flat, whatever the form of the plugger end may be, and fewer still will be found, in proportion to the number kept, in the individual dental equipment; yet a mass of gold melted and run into a cylindrical form and placed in a circular cavity with parallel walls, not too deep, and just large enough to take the cylinder—allowing it to slip in and out readily—can be so “riveted” or spread in the cavity with a convex-faced plugger that it will be made to fit the cavity and hermetically seal the orifice.* How much better this can be done by spreading the gold piece by piece as inserted, spreading the mass laterally, causing it to hug tightly the cavity wall from the base or seat to the surface. I feel sure that practitioners generally have not understood the ease with which moisture tight fillings can be made by taking advantage of this characteristic of gold, and that *a flat-faced plugger will not spread the mass.*

The proper condensation of a gold filling requires considerable thought and care. Its specific gravity is 19.3, but may be slightly condensed beyond this by heavy pressure. In inserting gold in a cavity piece by piece, the mass should be given a specific gravity of 16 to 17, as a rule. If less than 15, it will be porous, and allow the seeping in of moisture and become foul. If less than 16 in specific gravity, it may become battered or driven from its position by the mastication of hard foods, or the catching of solid particles between the teeth while chewing.

From tables published by G. V. Black, it is shown that a filling of definite size having a specific gravity of only 12.53 requires but fifteen pounds to reduce its length $2\frac{1}{2}$ per cent; while one having a specific gravity of 16.26 requires 225 to reduce it 2 per cent. The gnathodynamometer gives us records of force that may be given by the jaws in masticating ranging all the way from fifty to three hundred pounds. Hence a filling of low specific gravity placed in teeth of individuals possessing great strength in the muscles of the jaw and equal resistance in the periodontal membrane, may come to grief, while a filling with high specific gravity will readily withstand any

*This is a laboratory experiment.

force the jaws may bring upon it. A filling may be well condensed by hand pressure or by mallet force, and yet be comparatively soft; while one may be carelessly packed, left porous, and yet be quite hard, owing to much malleting. Gold, like steel or other metals, hardens or becomes tempered by pounding. So it is possible to have a soft filling, so to speak, of high specific gravity, or a hard one of low specific gravity. In condensing gold in a cavity of a tooth by the usual methods, force is used at each blow of the mallet ranging from ten to forty pounds. The force that may be used depends almost entirely on the power of resistance manifest in the peridental membrane.

Another table, given us by Dr. Black, shows that with the usual thickness of the gold ribbon or pellet used, and with a plugger point $\frac{3}{10}$ of a millimeter square, a blow of twenty-five pounds' weight is required to sufficiently condense the mass of gold immediately beneath the impacting point. And if the plugger is increased to $\frac{4}{10}$ of a millimeter square, it requires forty-five pounds to condense, and a point $\frac{10}{10}$ or one millimeter square requires a blow of 275 pounds to condense equal to the twenty-five pound blow on the $\frac{3}{10}$ point. In other words, *increasing* the size of the plugger point, *decreases* the condensing power of the impacting area in proportion to the increased area.

Again, the area of a plugger point is practically the square of its diameter. Five-tenths multiplied by five-tenths gives twenty-five as the area, while ten-tenths multiplied by ten-tenths gives one hundred, or four times as much. This being true, a reduction of the size of the plugger point below one millimeter increases the condensing power of the impact in proportion to the reduced area, and increasing the size of the point above one millimeter diminishes the condensing power of the impact in proportion to the increased area. Twenty-five pounds' impact or pressure on a point one-half a millimeter in diameter is equal in condensing power to one hundred pounds on a plugger point one millimeter in diameter.

When a pellet or roll of gold is placed on the mass already condensed, the plugger should be thrust against the piece to be condensed at or near its edge toward the center of the cavity and weld that portion to the mass. Then the plugger should be stepped across the newly laid piece toward the wall, condensing that portion next the wall last—wedging it in, as it were, between the already condensed portion and the wall. The idea of *wedging* gold between

the already welded portion and the wall or margin of the filling should always be prominent in the mind.

The stepping of the plugger, whether in the first condensation of the gold or in after malleting to harden or temper the layer should, as a rule, be from the center toward the periphery.

THE SUCCESSFUL MAN IN DENTISTRY.

BY FRANK W. SAGE, D. D. S., CINCINNATI, O.

There are various types of the successful dentist, and the standards whereby we measure success vary according to location and environment. One dentist's idea of success has reference mainly to his standing in the profession, which consciously or unconsciously he cherishes as the dearest object in life. To keep himself prominently before the profession by attending dental societies, contributing to dental journals, lecturing to dental students, is his absorbing thought. This kind of devotion is rather certain to bring a dentist patronage, whether it does or does not put money into his pocket. The last mentioned consideration has reference to other qualities in the man which may be wholly lacking.

Another man cares nothing for the professional body, denounces dental conventions as a bore, and dental journals as the mouth-pieces of a lot of inflated egotists, subscribes only for "practical" journals—in short, vaunts the superiority of "dental office practice over dental society practice." He cares nothing for reputation excepting the reputation which has strict reference to the territorial limits of possible patronage, leaving to those who care more for fame than for material prosperity, "the empty honor of a factitious reputation gained in convention halls."

So then it appears from this brief consideration of two prominent types of dentists, that in a sense the man who gets what he seeks in dentistry, may be regarded as successful. For the purposes of this discussion let it be assumed that success means a fairly prominent standing among one's compeers of the profession, and ability to command reasonable compensation for services rendered one's patients. The question, of course, ultimately resolves itself into a consideration of the man as a man, his natural aptitude for the special pursuit, his acquired qualifications, his ability to impress himself on people and to practically apply his knowledge.

It may be safely assumed that in the city the first type of dentist

(described in the outset of this paper) sets the standard toward which the better class of ambitious dentists incline. The second type of dentist coming openly in contrast with the first, is rather likely to find himself outranked, in the estimation of the more desirable class of patrons of a city practice. But in smaller towns and in the country, the second description of dentist may hold the very first place, for the reason that the people are innocently ignorant of the fact that a dentist ought to be a man of scientific attainment, as well as an artisan. This, if it be a fact, may be regarded as a satirical commentary on the higher aspirations of the profession.

The successful dentist is always a man of distinct force of character. In some recognizable way he is certain to influence and sway people. It may be by sheer overpowering force of personality, or by a gift of plausibility and easy persuasive influence. This refers to his relations either to his patient or to his fellows of the profession. The man who is a power in a dental convention is usually a power among his patients. Not always, however. He may be a fine theorist and wholly lack practical ability. On the other hand, a man may be year after year only a silent observer and listener at dental conventions, and yet hold the highest rank in and out of the profession. Again, we find emphasized the assertion that it is altogether a question of the man's personal character, which commands recognition independently of adventitious aids.

For years one of our leading dental journals bore as a motto on its cover this injunction to the reader: "Observe, compare, reflect, record." This admonition could hardly be improved on as a motto for the safe guidance of the dentist in all that pertains to the attainment of success. The successful man in dentistry consciously or unconsciously heeds every word of this four-worded admonition. You see him at the convention clinic, standing nearest the demonstrator, intently inspecting the work, inquiring for details, approving, objecting, challenging. No trifle escapes his notice. When all is done he has usually an opinion to offer. It may or may not be a correct opinion, but the fact that he has taken the trouble to investigate and form an opinion gives him precedence over another who has no opinion. And it gives him prestige in the profession. Insensibly but none the less surely the impression a man makes in a dental convention spreads abroad and gives him reputation among the people of his community. For it comes to be known that he

is critically observing and works up to high standards, and that means faithful service to his patrons.

The successful man in dentistry always insists on "being the doctor." He may be blunt about it or he may use admirable tact and *finesse*; either way he allows no dictation. This quality cannot be too highly commended. There is a strong temptation here to discourse on the causes of failure in the dentist, as affording a lesson more practically impressive than the more agreeable consideration of what makes for success. It is not so much what a man does as what he is, which decides his fortune. The singular thing about it is, that often the eminently successful dentist cannot be successfully imitated. He attains success through a combination of qualities so subtle, elusive, difficult of definition, that they defy analysis. However, some of these qualities we may define. A habit of observing has been referred to. The successful man in dentistry is always on the lookout for improvements in means and methods. He studies the intimate significance of things immediately and remotely pertaining to his calling. If at times he falls into error in his operations, he takes note of the failure and records the details, makes inquiry as to the cause and occasion of the failure, and so fortifies himself against a future repetition of it. To preserve the highest standing in dentistry a man must often record his failures, if he would not be caught off his guard and misled a second time. He who resolves in a general way to do better the next time a case of the kind presents, may have forgotten when the case actually presents itself, that he had trouble before.

Not to extend this paper indefinitely, it may be remarked that the man who is eminently successful in dentistry is always a student of human nature. Many men attain to a knowledge of their fellows only after it is too late to profitably avail themselves of the self-taught lesson. The unsuccessful man is often the victim of false principles set up by himself early in life for his guidance. Thus he may attach too high a value to a reputation for generosity and unselfishness in his dealings, not realizing that this may be a vice instead of a virtue. Such a man is rather likely to name a fee for a dental service which he thinks will be acceptable to the patient, rather than one which is adequate to the time, effort and skill required for the service performed. This, nine times out of ten, is but an exhibition of moral cowardice. For the man who thinks less of his obligation to his family, himself and his profession, and more of the impression he is making on the patient, usually lacks moral

courage. Say what we may as to this, beyond controversy, as a man esteems himself so is he esteemed by his patients. This no one better understands than the successful man in dentistry. Another thing he is likely to have learned, to-wit, that the respect which amounts to a wholesome fear, which some dentists inspire in the patient, is in the long run and in its widest application a surer means of gaining and holding control of one's patients than is excessive affability and an obvious desire to accommodate at any hazard. Human nature is a curious and unaccountable thing, and the mixing up of business and sentiment in the dental office surely entails loss upon the dentist. During business hours the successful man in dentistry is usually chary of employing toward his patients the familiar address which might be appropriate to a social function. It is said of a certain well-known millionaire, who on social occasions is the soul of affability, that even toward his friends he presents a rather cold, repelling aspect during business hours, as one who neither asks nor grants favors. This may not be advisable in the attitude of a dentist toward his patient, but it illustrates a principle which, with some modification, it may be, should be heeded by the dentist. Lack of firmness, and indecision, are not characteristic of the successful dentist.

The successful man in dentistry is a man of untiring energy. In this age of progress he must be so, in order to keep abreast of the times. But he is, too, a man of keen and prompt discrimination, who readily decides what is good and worth preserving in the midst of so much which misleads the overenthusiastic and too credulous inquirer. The faculty of deciding one's self instead of accepting the dictum of another, is an admirable quality which the successful dentist is fairly sure to possess. Sometimes a student becomes so enamored of the teachings and opinions of his preceptor that he is thereby misled, and so unconsciously places himself out of the race for the highest honors in the profession. For he fails to properly consider that while the teachings he has enjoyed may be good, other men's ways and methods may be even better. This is a common error of conceited minds. Some men never get over the feeling of complacent reliance on the teachings of their student days.

Fortunately for many of us, the successful man in dentistry cannot after all satisfy to repletion the demand for dental services in the average community, otherwise some of us would be compelled to quit business. If there is any one thing more surprising than

the unlooked-for success of some apparently unpromising men, it is the fact that so many apparently good men in dentistry render such inadequate service to their patients and yet retain a fair reputation. Which suggests that the man who ought in the logic of events to be a rank failure, escapes that rating by virtue of the fact that so large a proportion of the public who patronize him have never learned to discriminate in dental matters or anything else. The world is made up of all sorts of people, and men of all degrees of proficiency or inefficiency serve their fellows with a degree of satisfaction which varies according to the view of the one being served, and not wholly according to the estimate of some other member of the particular craft. On the whole, however, Mr. Barnum's statement that people love to be humbugged cannot be made to apply to the dentist's services. The humbuggery of a circus or a menagerie may be interesting and entertaining despite the fact of its being humbug, but a humbug dental operation has no redeeming features. The disastrous effects to the patient are too serious for so mild a term.

In conclusion it may be safely affirmed that no self-respecting man in the profession will be satisfied to contemplate in his plans for success, any end which does not take due account of the esteem of both his patients and his fellow-members of the profession.

HEMORRHAGES.*

BY T. ELHANAN POWELL, D. D. S., CHICAGO.

Accustomed as we are to deal with pathologic conditions of much sameness in the oral cavity, it is interesting but not necessarily pleasant to the operator to be able occasionally to note something out of the ordinary.

This "something out of the ordinary" having occurred in my practice very recently, I am impelled to relate the incident to you, with the hope that you may profit by my experience. Ordinarily, we dentists do not have to deal with serious surgical operations, consequently our experience does not enable us to be fully prepared to deal with aggravating hemorrhagic conditions when they appear. A small hemorrhage can readily be controlled by the application of topical remedies, such as alum, alcohol, vinegar, salt, subsulphate of iron, etc.

Having placed my confidence in these usually effective styptics in

*Read before the Englewood Dental Society, April 16, 1902.

the past, I was much surprised, not to say startled, when my first really serious case came in the shape of a severe arterial hemorrhage from a ruptured branch of the superior dental artery.

The patient, a young lady of twenty-five, came to me several years ago for an examination, her teeth being then in a bad state of decay. Having a neurotic temperament, her great dread of the dental chair caused her to postpone the operation from time to time, until the conditions were decidedly discouraging.

Several of the teeth were decayed to the gum, two of them having every symptom of necrosis, the local conditions being accompanied by the characteristic odor.

Although having these conditions present, the fear of pain caused a further postponement of the much needed repair.

Finally, when the patient fully realized her condition, I administered chloroform, removing the lower third molar on the left side, the lower left first molar and the lower right second bicuspid. The upper left first bicuspid and the upper right third molar were the ones with the diseased process.

With a pair of alveolar forceps, I removed the bicuspid, and the affected bone by cutting right through gum process and root together.

This was done with comparative ease, but when I came to the third molar, I encountered trouble. The necrosis at this point extended for some distance, both buccally and lingually. I met the difficulty by first removing the roots, then taking a separate bite for each portion buccally and lingually. I felt then that my work was finished, and began the disinfection of my forceps. On turning again to my patient, I saw the blood spurting with each heart beat, and streaming out of the patient's mouth. Immediately placing my finger in the patient's mouth, I located the hemorrhage by the sense of touch lingually from the cavity of the last tooth extracted. One of the capillaries had evidently been ruptured by the removal of the last piece of bone. Hastily rolling up a large piece of cotton, I dipped it into a bottle of campho-phenique, and applied it to the cavity, but to no purpose.

This was followed persistently for some minutes by subsulphate of iron, but the blood continued to flow. I was beginning to be filled with the fear that I had met my Waterloo. The patient was losing too much blood for safety. Happily, I bethought me of my little sample bottle of suprarenal capsule. Dipping a large piece

of cotton into this proprietary powder, I forced it into the cavity with a pair of laboratory pliers, when, presto, the capillary became quiescent, and I was relieved.

As soon as I had stopped the hemorrhage mechanically, the physician began the administration of internal remedies, as the patient had by this time sufficiently recovered to be able to swallow.

This case was aggravated by several recurrences at intervals of from four to ten days, when I sent the patient to the hospital, intending to tie the external carotid, should it become necessary. Happily, there was not a recurrence and the patient made a slow recovery.

This patient is of a hemorrhagic diathesis, it being hereditary. Her father died about a year ago from apoplexy.

This naturally leads us to study the conditions which give rise to this diathesis, so-called. There are people who are frequently subjected to traumatisms involving large capillaries without any serious or alarming consequences. Why this difference?

The arteries have three walls, namely, tunica adventia, or outer wall; the tunica media, or middle wall, and the tunica interna, the internal wall. The tunica media is the muscular coat, and its function is largely the contraction of the walls of the artery. This contraction responds to the vasomotor or sympathetic nervous system, and this responsiveness is called the "tone" of the artery. A lack of tone is given as the usual reason for the hemorrhagic tendency. If the pulse is of a soft yielding nature or of a hard rigid nature, either condition is an indication of tone derangement.

Another reason for hemorrhagic diathesis is that condition of blood which limits the power of coagulation. This coagulation is assisted by what is called "coagulative fibrine." If the blood is deficient in this respect, at the same time that the walls are lacking in tone, any considerable hemorrhage is serious if not dangerous.

Another probable cause for lack of tone in arterial walls is the presence of uric acid in the blood. The uric acid diathesis is responsible for the breaking down of many of the tissues, gout, rheumatism, pyorrhoea alveolaris being concomitant.

My opinion is that if a careful analysis of the fluids of the body be made where hemorrhagic diathesis exists, uric acid will be found in large quantities.

The tone depends largely upon the oxygenation of the blood; hence a lack of pure air and sunshine is favorable to the acquisition

of a hemorrhagic diathesis. As age advances there is a diminution in the assimilative ability of the digestive apparatus, and the impairment of the arterial walls coincides with the general deterioration from lack of nourishment.

The systemic remedies usually employed are ipecac, acetate of lead, aconite and ergot; the latter being most commonly used.

It might be of interest to the society to have a little homeopathic materia medica before I close.

Below I give a list of remedies used by the homeopathist with indications for each remedy.

Aconite—Blood bright red, face pale and anxious, patient afraid he is going to die, restless, pulse-quick and wiry.

Alumen—Hemorrhage from extracting teeth.

Arnica—Hemorrhage from traumatism.

Arsenicum—Blood bright, coagulates slowly or not at all; patient restless. (Notice this is somewhat like aconite, but aconite has several symptoms which this has not.)

Belladonna—Blood bright, hot; face flushed, pupils dilated, carotids throbbing, full, bounding, tense pulse. (These are the symptoms possessed by the patient whose case I have discussed, and this is the remedy given.)

Chamomilla—Blood bright, patient faints frequently, pulse irregular.

China—Blood bright, face flushed, turning to pallor; cold hands, extreme exhaustion, skin cold, pulse feeble. (Remedy useful after long continued hemorrhage and was given to above patient after second recurrence.)

Ferrum Metallicum—Blood light or lumpy, coagulates easily in anemic patients; pale, bloated appearance.

Ipecac—Blood bright red, lips white, nausea or vomiting. From mechanical cause.

Nitric acid—Blood bright, profuse; from caries of bone due to syphilis.

Phosphorous—Blood bright red, with shock from injury, almost always a history of bleeding. Small wounds bleed much. Blood does not coagulate easily.

PROCEEDINGS OF SOCIETIES.

ANNUAL CLINIC OF THE SCHOOL OF DENTISTRY, UNIVERSITY OF ILLINOIS.

Discussion on paper of Dr. Jonathan Taft entitled "The Power of Association."

DR. G. V. BLACK, Chicago, Ill.: Mr. Dean, Ladies and Gentlemen—It would seem as if it ought to be a very easy task to discuss such a paper as this, which has passed over ground that is fairly familiar to me; a groundwork that has been laid mostly during my own study of dentistry and dentists, and yet any considerable discussion would necessarily be merely a filling in of gaps that have been left by the speaker because of lack of time.

The selection of the particular points dwelt upon in the paper seems to have been most excellent, touching here and there upon the work of our associations. In the years that have been lived through and the meetings of dentists attended personally by the writer he has seen dentistry grow from what could be called a trade into a great associated profession, all owing to the associated effort that has been made by dentists in behalf of their chosen calling. It was practically by persons sitting alone in their offices, not looking for associated effort at the time, but really stimulated by it to seek for ideas upon which to base the right and wrong of operative procedures; each man determining for himself what in his opinion would be the best method, making his own inventions, making his own instruments, possibly, and giving the results to his fellows, and in this way trying to improve this profession of ours.

How different it is for you young men who are just entering the profession or who are in your first year of practice, or who are making your first preparation for practice! You have the fund of information accumulated and the full organization of associations to guide you. If you can imagine the difference that exists between that time and the present you can perhaps more fully appreciate the value of associated effort.

Yet I could wish that the history had gone a little farther back. There is a little story lying just beyond the beginning of Dr. Taft's narration that I wish I knew a little more about. That seems to me one of the very important factors that did much to stimulate and develop this associated effort and many of the same men who were instrumental in that were instrumental in the later efforts that have

been detailed. It was the publication of that wonderful journal, the old *American Journal of Dental Sciences*, in which a large number of our old text-books on dentistry were reproduced, *fresh* books, a republication of those that were out of print, some of them more than fifty years old. Some thirteen or fourteen books on dentistry were taken up and republished in that journal, in addition to fresh material especially prepared. I looked over the subscription list of that journal during some of those years, and a recount of that list will show that the publication of that journal, the translation of books from the French and other languages and the gathering up of these old books was largely an associated effort. I know that at least one of the subscribers took fifty copies, others twenty-five, others ten copies, and a great many took five copies and paid five dollars apiece for them, too. Why was this? It was done in the interest of the profession, so that the journal could do its work. It was an associated effort that did much to stimulate and start the work that has been detailed by Dr. Taft. This was done to enable our young men to gain a better knowledge of the literature that had been developed in the forty, fifty or sixty years prior to that time.

We need in our school a chair of dental literature in order to interest our students in that which has preceded them and us, and in that manner explain in a large measure the conditions that now exist in the dental profession; the forces that have brought about the present conditions, which would, I hope, stimulate the younger men in the profession to a greater associated effort, for it is for that we must carry on this work in the future. Let me say to you, you young men who have to take up this work of associated effort and carry it on in the future, there is as much opportunity for distinction in the future as there ever was in the past. Our profession is by no means complete; all has not yet been discovered. There are still discoveries to be made; new things to be brought out in every branch of our profession, and you will be expected to do it. There are more new things presenting themselves to-day for development than at any other time of my life. More things that need to be worked out, that need to be sifted, that need to be brought forward and explained, than ever before.

As there are others to follow me, and as it is growing late, I will not burden you with any further remarks, trusting that I have said enough to introduce the discussion of the subject.

DR. TRUMAN W. BROPHY, Chicago, Ill.: I esteem it a great

honor to have been invited to discuss the paper presented by our friend, Professor Taft. We have had the privilege this afternoon of enjoying that which the members of no other profession could enjoy. We have listened to an address by a gentleman who was present at the birth of our profession. We have listened to his review of the history of the events which have led from the beginning up to the present time. We have met here to-day not only to be present and witness the clinics that have been given here, but to do honor to the distinguished man who addressed us this afternoon. We honor Dr. Taft because he has always been at the front and has always put forth his very best efforts to advance the dental profession and bring it up to its present high standard.

We have present with us this afternoon men who represent all of the different important departments of our educational system. One, the dean of the Northwestern University Dental School, who has just spoken; a gentleman who formerly was dean of that same institution, Dr. Swain; a gentleman who is a member of the Wisconsin State Board of Dental Examiners, Dr. Chittenden, of Madison, Wis., and a gentleman who represents the profession of the South, Dr. Tileston. These men are here because they are interested in the progress of dentistry, sufficiently interested to come here and listen to the admirable address just delivered, and the address which we have heard to-day, gentlemen, will stand as an important page in the history of our profession. It marks an important era in the history of this institution that such an address should have been delivered here, and I predict that brilliancy of future which must come to men who have had the forethought and the desire to do something that will make a field day in the history of their institution to have secured Professor Taft to deliver this address this afternoon.

I find that I am not discussing the doctor's paper particularly, but unburdening myself of thoughts that were on my mind. I wish to speak especially on a phase of this subject in which I have always been very much interested, one which has perhaps been somewhat underrated by the members of our profession, and yet it is of vital importance to us all. I am convinced that this lack of interest is not due to a lack of interest in the welfare of the profession, but rather to a lack of knowledge of the scope and nature of the work to which I refer. I speak now of the International Dental Confederation which will hold its annual meeting

in Stockholm this year. There is a singular apathy displayed by the American dentist in this movement, and yet a closer acquaintance with its objects would, I am convinced, appeal strongly to the professional pride of our American brethren.

It seemed to me, while listening to the address of Professor Taft outlining the work proposed by Dr. Hayden and his associates, that this gentleman looked far enough into the future to anticipate exactly what was done at the meeting in Paris last year of the International Dental Congress. They proposed to engage in international work, and that is exactly what the meeting in Stockholm will do next summer. This meeting will be attended by representatives of the dental profession throughout the world. Seventeen nations were represented at the last meeting in London and Cambridge. This year a greater number will be present because the last meeting was the first really of this association, the initiative meeting, and when we have completed our prospectus, when the proceedings of this association shall have been published in all our dental journals, the members of the profession throughout the world will say that it was a good work and well done.

I trust that this meeting will be largely attended by American dentists and that all who are able to go will go. Time will not permit any further remarks on this subject, and I am sure that others will address you in a more interesting way. I thank you and the officers of this institution for inviting me and trust that the next annual clinic of the college will be as successful as was the one conducted here to-day.

DR. EDGAR D. SWAIN, Chicago, Ill.: I consider myself in good fortune to have received an invitation to attend this meeting. I am very pleased to have an opportunity of again meeting my old friend, Professor Taft, and am very glad also to note that he has lost none of his ability as an essayist.

It seems to me that this question is one which hardly permits of any discussion. I always believe that in order to have a good discussion there must be a negative, but here is one of those questions on which we must all agree, to which there is no other side. If two sticks are rubbed together vigorously fire is produced, and if an associated body of human beings are rubbed together heat is produced, the blood is warmed up, the circulation is increased, and therefore we get a better brain product. Association seems to be the great factor for advancement in all directions. Among the

corporations, the banks, the railroad companies and the manufacturing concerns we have what are called trusts. They are associations, whether for good or for evil time will determine. Several of the gentlemen present here to-day have told me of the advantage they have gained from their connection with associations in our profession. I know that I got my first impulse to do better work and to advance my profession and to labor in the direction of elevating my brethren from my dental associations. It is so with a great many of us.

I am not much of a speaker and I know that you are tired, and most of the gentlemen who have been standing on their feet all day trying to get a good view of the clinics are tired, and therefore I will not attempt to entertain you further. If you want an argument in favor of the power of association I would call your attention to this bouquet. Any one of these flowers is beautiful beyond comparison, but look at the mass blended together in all their variety of color, and we have the strength and solidity of combination.

I thank the officials of this institution for the privilege of being here to-day, and I thank you all for the courteous manner in which you have received me.

DR. C. C. CHITTENDEN, Madison, Wis.: Dr. Taft's paper carried me back a great many years. When it was stated that the doctor began the practice of dentistry in 1842 it occurred to me that the doctor has at least one contemporary, inasmuch as I was born in that year, and of a father who was a dentist. So that I also began the practice of dentistry in 1842.

I wish that you could have experienced the feelings that welled through me when Dr. Taft arose to speak and I listened to his voice, and that you could remember what I remember and what was brought back to me. Dr. Taft was the dean of the old Ohio College of Dental Surgery, where in 1865 I got my first lectures in dentistry, and every man who sat under his teaching will always remember the kindly, earnest tones of his familiar voice and feel the guiding weight of his hand upon his shoulder as a teacher, as an adviser and as a friend.

The paper is hardly discussable, being in itself so exhaustive and complete in every detail, but there are one or two things that I might speak of in connection with it. The boards of dental examiners in this country are the result of dental laws, and dental laws are the result of dental association. The conviction of the

necessity for dental laws was borne in upon the profession by the power of association. When men came in contact with each other they recognized their weaknesses and the need of certain laws to regulate things, laws that should bring the profession up to the ideal standard. They found that the only way in which dental standards could be maintained was by legal enactments, and as one State got a law that protected the people of that State from impostors and bushwhackers another State did the same. When Illinois got its dental laws we in our State got the rabble, and as a result we found it necessary as a body of dentists to protect the profession of our State by securing laws. That is the history of the birth and growth of dental legislation. Dental legislation was practically the product of dental association. Each State has its own laws, and if you scan the laws of the different States you will find that where they seem to be as diverse as things can well be, still they are in the essential very much alike. They are all striving to gain the same end, and a careful investigation of dental laws shows that the mind of the entire dental profession was striving to establish a reputable profession, one that would come up to the standards and requirements of the people whom we were to serve.

The State boards found that they were unable to accomplish all they would like to as individual State boards and they strengthened and unified their efforts by association, which constitutes the National Association of Dental Examiners spoken of by the essayist. The colleges, too, found that they could not do as good work individually as collectively, so that they associated themselves under the name of National Association of Dental Faculties. The National Association of Examiners is now about seventeen or eighteen years of age and the Faculties' Association but a few years older. Although there has been a little friction in times past between the colleges and the State boards, it gives me great pleasure to say to you that the two national bodies are now working hand in hand and head to head to build this dental profession which we all love and honor.

DR. H. B. TILESTON, Louisville, Ky.: I was not aware until a few minutes ago that I was expected to take any part in this discussion, and I feel something like the lady in a little story that I heard in connection with one of the representatives in the legislature of our State. The gentleman was elected to the legislature from one of the outlying districts—a Rube, you might call him—and

neither he nor his wife had ever been accustomed to any social functions outside of possibly corn-huskings and quilting bees now and then. When they arrived at the capital city they of course attempted to take part in some of the social affairs. On one occasion they were invited to attend an opera party, and when one of the lady's friends asked her whether she was going she answered: "Well, yes, I reckon I'll be there, but I don't expect to take any part in it." That is the way I felt when I came here to-day.

While I was sitting here and listening to Dr. Taft I was carried back to my early manhood days when I was studying dentistry, for it was at his feet that I sat and imbibed my early training in the profession of dentistry at Ann Arbor. So that I feel that he is not only the father of the dental profession, but that he is my individual professional father as well. I reverence him and I have always looked up to him all these twenty years since I graduated from the University of Michigan.

The power of association cannot have any better illustration than that which has been accomplished by our brethren through that very means, through the spirit of self-sacrifice, the willingness to give that which has been given to us by others, through those associations the history of which Dr. Taft has given us so well to-day. The spirit of self-sacrifice that professional men have toward one another is not comprehended by the laity, and particularly by the business man, who always looks at things from a commercial standpoint and always wants to see where there is a profit in it.

When I received the invitation to give a clinic here to-day I happened to have a gentleman in the chair for whom I had performed the operation which I demonstrated to you here to-day. I told him that I would have to postpone an engagement which I had made with him because I was obliged to leave the State to perform the operation which I had done for him. He said he supposed that it would be a profitable trip for me. I said: "Yes, by bringing me in touch with some of my professional brethren again." "You mean that you will be well paid for it?" "No, I will not be paid for it, and besides I will have to pay my own expenses." He confessed that he did not understand that at all, how a man could go away for any such purpose unless he could make something by doing so. You see, this spirit of self-sacrifice, which is a characteristic of the professional man, is not understood by the laity.

I do not want to keep you any longer, but in closing I merely wish to say that if the history which we have heard to-day is responsible for our development up to our present status, let us ever have time in the future to take advantage of associations wherever we may have an opportunity to do so. Be present at every dental meeting that you possibly can, for you will there have an opportunity to see and talk with your professional brethren and thus do yourself and them some good. It is through self-sacrifice that we benefit our fellow-men. I thank you very kindly for your invitation and I hope that success will ever attend the College of Dentistry of the University of Illinois.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

The annual meeting was held at the Victoria Hotel, November 19, 1901, with the president, Dr. L. L. Davis, in the chair.

President Davis delivered his annual address. He selected for his subject "Pyorrhoea Alveolaris and Prehistoric Man."

DISCUSSION.

DR. A. W. HARLAN was asked to open the discussion. He said: The address of the president has opened up such a new subject that perhaps it might be well to dwell upon it. In looking over the teeth that have been exhibited it seems to me that the tooth that shows the most characteristic deposits on the roots is the third molar, which apparently has had little or no opposition, or after it had been used a while it had become loose from nonuse. Perhaps it would have been better to have had these teeth separated; it would have been interesting to have seen the jaws whence these teeth came, to have seen the teeth in their sockets, because we are unable to determine from inspection of the teeth their exact position in the mouth. There is evidence of friction, as well as evidence of disease around the roots of the teeth, with undoubted accretions. But just what they would indicate from their appearance here, detached from the jaw, we are unable to determine. There are no evidences of the ordinary salivary calculus, as we know it and see it and observe it to-day, but there are deposits on the roots indicating that some disturbances of the peridental membrane have taken place, accompanied with inflammation and suppuration, and that is as far as I can go from an inspection of these teeth.

While the paper is interesting from the standpoint of its having

presented objects of such great antiquity, it does not seem to me that it will throw much light on our present knowledge of disease of the sockets of the teeth. The one essential thing is lacking—the condition of the jaws—and that we cannot reproduce. The lack of use of teeth results in a good many mouths in either hypercementosis or wasting of the bony socket, with firm deposits on the roots, and ultimately such teeth are extruded from their sockets by inflammation or by the production of pain. In cases of inflammation and suppuration the teeth drop out, and in other cases they become so painful to their possessors that they are compelled to have them extracted, and it may be that, in these ancient persons who possessed these teeth, they had both conditions.

Those of you who have read the early editions of John Tomes' "Physiology of the Teeth" will remember that there was one case reported in which there were twenty-eight teeth extracted, one after another, all of which teeth had a hypercementosis of the roots. This was considered to be a very extraordinary case, and I suppose from that time to the present much thought and speculation have been given as to the cause of it. In that case it does not appear that the teeth could have been without opponents, because the historian said one by one those teeth were extracted on account of great pain that they caused the patient. And from time to time, if we look over the *Dental Cosmos* and some of the older dental journals, we will find that the so-called exostosis of the roots of teeth was productive of much neuralgia and ultimately, in order to effect a cure, the teeth were extracted. I am unable to advance any theory with reference to these teeth, because the matter has been brought to my notice so suddenly that I have nothing with which to make a comparison. I should say, however, that the most pronounced tooth of the lot was the one where there was no opposition—the third molar tooth—that has the greatest amount of deposit, and it undoubtedly was a case where there was considerable suppuration around it when it was in the jaw.

DR. A. O. HUNT: I do not know that I have very much to say in discussing this paper. Of course, the exhibition of teeth has been a matter of intense interest, and this subject of the teeth of mound builders has been interesting for a good many years to those who have followed up the evidences of the mound builders. But I cannot agree with some of the statements made in the paper. One set of teeth or two sets of teeth do not give us enough data

from which to judge as to what the conditions of life, and of their teeth particularly, may have been during that period. According to the paper, the mound builders represent a large class of people extending over a long period of time, from those of the stone age down to the modern Indian, all having habits and methods of building mounds. It has been my pleasure two or three times to examine a good many skulls taken out of mounds along the Mississippi River and from various parts of the country, and I presume a great many of you have seen Dr. Patrick's collection of such skulls. He opened a great many of these mounds in what is known as the American bottom along the Mississippi River. He had a large collection of them and the conditions of all of them were very much alike—that is, indicating extreme age, that the mounds had been built a long time, because the jaws and bony structures of the body were so badly disintegrated that in many cases there was hardly a complete bone found. The teeth, however, had retained their integrity, as they always do. We find that the teeth of the buffalo, the antelope and the mastodon and all the ancient animals are well preserved, while all other evidences may be entirely destroyed. The phosphate of lime is practically indestructible. We have the same condition in a shell composed of phosphate of lime, where these shells are never displaced by the crystallizations of other substances, like iron, stalactite, lime, etc. The shell is preserved intact in the rock, so that it is not strange that the teeth should be preserved through nearly all kinds of conditions, because the enamel and exterior of the teeth are very nearly indestructible. But what set me thinking particularly about the matter, while the paper was being read, was the statement that these teeth belonged to individuals who had not yet been spoiled by civilization.

Most of you must remember when Dr. Patrick was appointed by the National Dental Association to investigate this subject, which he did very carefully by appointing men all over the world to examine and tabulate the results of their examinations of the various skulls in all museums that access could be had to. I think the results of those investigations were printed in the transactions of that association. The diseases incident to the mouth and teeth were not more marked in civilized man than they were in the prehistoric man. Evidence of all classes of diseases, with which we are all familiar, was found, and among them pyorrhoea alveolaris, etc. In examining these teeth it is impossible to judge as to whether pyor-

rhoea existed or not without seeing the jaw and the relation of the teeth to the jaw, the condition in which the alveoli of the teeth and the surrounding bone were found. The best evidence of pyorrhoea in skulls is always shown in the bone.

I am fully of the opinion from all I have read and observed of this subject, and from what others have said and written, that undoubtedly the best race of people, both mentally and physically, that exists on the face of the earth or ever did exist we have at the present time. There has never been a time when, in proportion to the number of people living, the physical characteristics have been so good as they are now. One of the sayings of our old friend, Dr. Patrick, used to be this, that if Samson was living at the present time, John L. Sullivan would knock him out in one round. And this is likely true as to the physical characteristics of the races of to-day. We have certainly made progress in every department and in every characteristic—mentally, physically and hygienically.

That gout may have been present in some of these people we are not so sure. If we mean the gouty diathesis or a condition wherein uric acid circulates in the blood, the Nomad suffered considerably with what is known by the common name of rheumatism. It was a very prevalent disease. We find that disease in the modern Indian. Their exposure, lack of care, poor attention to themselves, is conducive to rheumatism and we rarely find a tribe of Indians who have passed middle age but that are subject to that condition.

I do not see very much in the exhibition of these specimens which will change the results of our investigations along other lines. However, I feel that it is a very interesting subject at the present time to consider, and it is one that will never grow old, because undoubtedly all of the obtainable data has not yet been gathered together in regard to these people.

DR. J. E. HINKINS: I enjoyed the paper of Dr. Davis very much. I am not a comparative anatomist. I am unable to draw any conclusions as to what diseases were present in these teeth without seeing the jaws.

You will pardon me for digressing a little from the paper. Last week I had the privilege of attending a meeting of the Egyptian Society at the University of Chicago. One of the professors, who had just returned from Egypt, read a paper. He has been in Egypt on a tour of investigation for three years, and gave abundant evidence to show that three thousand years before Christ in Egypt

they had as complete a system of books for running cities as we have in Chicago to-day. He brought back copies of such books. Copies of them have also been placed in the museums in London within the last six months. In the debris thrown out from one of the old cities there were bucketfuls of papers thrown in the dumping ground, and some of these papers he was able to read very readily. He went on to show that the people in those days were in an advanced state of intelligence and of civilization. He brought back a number of anatomical specimens with him, and among them were a few teeth. I found two teeth that had gold fillings in them. Whether the fillings were put in after the individual was dead or when he was alive I am unable to say. However, the teeth were filled with gold, and he mentioned statistics to show that they were put in three thousand years before Christ. Whether they used cohesive or noncohesive gold in those days I do not know. I simply refer to this as being in line with the paper of Dr. Davis. I have had an opportunity of talking with the professor since that time in my office, and I hope to be able to get more information from him and subsequently bring it before the society. He is one of the highest authorities in that line of work.

DR. E. A. ROYCE: I do not know that I can add anything except my thanks to Dr. Davis for his presentation of this subject. The remarks of Dr. Hinkins lead me to say that while I was in London one of my patients told me that he saw an artificial tooth in the mouth of a mummy in Egypt. He was well satisfied that the tooth had been in the mouth many years. The method of attachment was by gold wire. I cannot vouch for the statement further than that.

The teeth that have been passed around struck me in a little different light from what they did other members. I was impressed with the beautiful outlines of the younger teeth. I was likewise struck with the lack of perfect formation of almost every tooth that I saw. The reason these teeth were not decayed apparently was because of the fact that they were worn down before they had time to decay; and undoubtedly the food at that time was not composed of articles that were likely to ferment or putresce and cause decay. We will find scarcely a tooth among these young teeth where the islands of calcification are thoroughly united. It strikes me that if a child presented with this same lack of conformation I should cut the fissures and fill just as I do for my patients. That is a feature

that surprised me. Immunity from decay would seem to be largely due to the difference in the food they had at that time from what we have at present, as well as a difference in the attrition.

I do not know that I can say anything more on this subject. I do not think the ancient history of *pyorrhoea alveolaris* gives us any definite information as to the cause of it.

DR. C. N. JOHNSON: The examination of these specimens of teeth has been very interesting to me, particularly in the landmarks that they present as to the extent of mastication in those mouths. It is perfectly evident from these specimens that the people who lived in those days were in the habit of using their teeth a great deal in mastication, much more so than we do to-day, and that very fact of excessive mastication may account for the lack of caries that we see. Caries has been demonstrated in some of these specimens, but the same proportion of caries which we would expect to find in people of the same age to-day is not present. In speaking of the landmarks of mastication in these teeth, I was interested in one specimen in the younger teeth. This is the one I hold in my hand. I have been more deeply impressed with it than with any other specimen. Here is a tooth which is not yet fully developed at the apical end, and still we see evidences on the occlusal surface of vigorous mastication, a worn surface where the cusp of the opposing tooth came against it. In this tooth, young as it is, we find the beginning of worn facets upon the approximal surfaces, a thing we would never have expected to find in a young person, as this evidently was at the time of death. This leads me to think that possibly in some of these cases we may have *pyorrhoea* as the result of excessive attrition. We see in the older specimens that have been passed around very emphatic evidence of excessive attrition, and it is possible to so abuse the periodontal membrane by excessive use as to bring about deterioration of it and the formation of serumal deposits, as we see here, leading to *pyorrhoea*.

I am very glad Dr. Davis has brought this subject before us. We cannot delve too deeply into the prehistoric evidences of this character, and we get many significant lessons from examinations such as these.

DR. W. V.-B. AMES: I am very glad to have been present and seen these beautiful specimens. One point that has been forcibly impressed upon me was the one referred to by Dr. Johnson. I do not see in any of these specimens any special evidence of a

pyorrhoeal condition, excepting in the specimen of what appears to be an upper third molar. In these days we often see a pyorrhoeal condition or a loosening of the teeth from excessive attrition, to which Dr. Johnson has referred. Very often a tooth is masticated upon in such a way that it becomes wrenched in its socket, and consequently there is caused a deposit of serumal calculus, and disease of the socket is set up in which we have suppuration and loosening of the tooth. The thought has occurred to me that such a condition had taken place with regard to the upper third molar that has been passed around, as it gave more evidence of that than any of the others. I do not see that there is any evidence in these specimens that in those days the people suffered very much from what we term pyorrhoea.

DR. WOOLLEY: As regards the teeth Dr. Davis refers to in his paper and on exhibition, I observe the same pathological conditions existing during the lives of these people as those of to-day. From observing the ends of the root of many of these teeth, it is evident that a state of disease existed there, such as pulpitis or death of pulp, causing abscesses, or more probably blind abscesses, so that the apical ends of these roots showed disintegration to the extent that they are sharp, rough or jagged.

DR. DAVIS (closing the discussion): When I prepared this paper I purposely left out any theorizing on my own part in order to obtain as full a discussion of the subject as possible. When I saw these specimens the first one that came into my hands was the third molar, which shows marked calcific deposit. I looked over these teeth carefully, and I found among the old ones that there were few that did not show some signs of absorption or deposit—very few indeed, and I had, up to that time, never heard of any theory advanced that would account for the presence of pyorrhoea among people who were in the habit of using their teeth as these people had evidently used theirs. The idea that has been advanced by Dr. Johnson, that excessive use of the teeth may have caused the condition referred to, is one that did not enter my mind. I have presented this matter because I thought it would be of interest, and I had hoped to learn something from the expressions of opinion of others.

Regarding the gouty diathesis, and its being more especially the result of luxurious living, I still think I stand on a pretty firm foundation regarding it. As to the rheumatic theory and the

prevalence of rheumatism among Indians at the present time, certainly it may be ascribed to their different methods of living and the injurious results of their contact with civilization. Among the early historic races such a thing as rheumatism was unknown. They were exposed to the weather and elements, and their physical frames were entirely different from those we see at the present time. In fact, measurements and the finding of bones in complete skeletons go to show that there are no men living at the present time, with one or two exceptions, who have such excessive stature and wonderful physiques, and we read even in the history of this country, or more especially of Central America, that during the time of the Spanish invasion or the finding of this country by the Spaniards and their explorers, that they came in contact with races in Central America whose stature was far beyond anything that they had ever met. I happened to think of one particular case that is mentioned in one of the histories of prehistoric peoples, which is now out of print and which I had the pleasure of going over within the last month or two, where it is said that the Spaniards came in contact with a chieftain whose breadth of shoulders was over three feet, and that there were a large number in the same tribe who came close to this man. Of course, that statement does not dispute the fact that men may be living at the present time who are the equal in physical stature or capacity of the men we read of in ancient history, or more especially those of prehistoric times.

Regarding the manner in which these specimens have impressed you I am a little disappointed. I expected to have had the subject of pyorrhoea more thoroughly discussed.

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Schiller Building, December 3, 1901, with the president, Dr. A. B. Clark, in the chair.

Dr. D. M. Cattell read a paper entitled "Care, Preparation and Condensation of Gold in a Cavity."

DISCUSSION.

DR. J. N. CROUSE: Without going into details concerning millimeters and exact measurement of instruments, I would say that the shape of the plugger point is a very important consideration. The essayist's proposition to take a solid ingot of gold which partially fills the cavity and mallet it sufficiently to make it an absolute

fit, does not impress me very favorably, although it probably could be done with a large enough mallet and a strong enough tooth. I have heard the spreading quality of gold discussed many times, and undoubtedly spreading does take place if the gold be hammered hard enough. I should prefer, however, to condense the gold where it was needed, driving it to place independent of its spreading property. If I failed to get a mass of gold part way up the wall of a cavity I should be doubtful of being able to spread it enough to fill the interstices.

Although I have done so several times in the past, I would again make a plea for the use of noncohesive gold in the form of cylinders, the length of same being equal to the depth of cavity. I use No. 10 gold and fold it four times, making No. 40. Occasionally it is folded again, making No. 80. The gold does not crumple up nor take so much force to condense as a pellet giving the same thickness would. By keeping the surface of the filling as flat as possible, and by folding the gold on, you can condense it without heavy malleting and do the work very rapidly. This method saves time, protects the peridental membrane, guards against the danger of chipping the surface of the cavity at the cervical margin, and lessens the danger from leakage. The fillings are finished with cohesive gold.

I am glad to hear operative dentistry discussed once in a while, because we hear so much about porcelain work nowadays that we might otherwise think operative dentistry had gone out of style.

DR. G. V. BLACK: Most of the propositions in the paper are practically correct and I have no quarrel with them. We know these facts pretty well, and while I should not quarrel with the essayist in an effort to make use of the spreading property of gold under the mallet, because it has that property, I would rather, like Dr. Crouse, put it where I want it and mallet it home in that position; or in contact with the wall rather than undertake to spread it after it is in a degree condensed. Just there is a little criticism I have regarding the use of the heavier foils in cavities. I like to use the heavier foils if I am building up beyond a cavity wall; it is easier to make a strong filling, but in using it in cavities I fear it is more difficult to bring it into position against the wall than it is the lighter foils in the form of pellets or otherwise. I would caution the younger men against that difficulty in the use of the heavier foils in a cavity. In folding it in, some of the folds do not quite

reach the place one desires, and we may get what we long ago used to speak of as "rat-holes" alongside of the walls.

In regard to the gases condensed upon gold, we know perfectly well what some of them are. It is easily demonstrated. We do not know what some others may be. If we expose gold foil to chlorine and then to ammonia, we may drop that gold into a long test tube and anneal it while within by heating the tube, and in the colder portions of the test tube we will obtain a ring of ammonium chloride, which we may take to the laboratory and determine by proper test to be ammonium chloride. Those of you who have not seen that test made would be amazed at the amount of material that has been condensed upon the surface of a roll of gold, made of No. 4 foil. There will be enough to form a thick, white ring around the test tube. These gases are condensed upon gold and combine to form a salt. The paper stated correctly that if the salts which have formed upon gold are evaporable we may remove them by annealing. If such gases condense on the gold as form a salt that we cannot remove by annealing, cannot vaporize, we have lost permanently the welding property of that gold. I have seen many specimens of gold foil that had lost the welding property, so that I was unable to renew it by the annealing process, and I have seen packages of gold in the hands of myself and some others and in the hands of dealers that have suffered that kind of injury. I think when the S. S. White people were moving from their former establishment a number of years ago there was a large package of gold that was perfect laid down in the process of moving, and when they entered their new place the welding property of the gold was lost in such a way that it could not be recovered by annealing. This occurred within a few minutes on account of some undue exposure. Such exposures of gold are liable to occur at any time, and on account of these exposures the welding property of the gold is destroyed. But there is another kind of destruction of the welding property of gold that is still more dangerous, because the gold may seem to weld well and yet not do so. This may be demonstrated nicely by the use of certain qualities of illuminating gas. Leave a sheet of gold in the gas in a jar over night, and you will find spots of dark spangles starting out upon the gold. The gold is not covered with a film entirely, but there are spangles starting out upon it much as we find rust starting out upon steel instruments, covering a portion of the surface. These are not removed completely by the ordinary

annealing process. Put another piece of gold upon one of these spots, after you have annealed it and apparently removed it, and you will fail to get the welding property. But place it on a portion not so covered with spangles, and you will get the welding property. Gold suffers that kind of deterioration quite frequently, not from illuminating gas always, but from some others that affect the gold in a similar way. There will be spots on the surface of the gold that will not weld, while the main bulk of the surface will weld; consequently if you are building where you need strength, you may be amazed the next day or week or month by having a piece knocked off just where you least suspected from the failure of the particles of gold to weld. These things occur pretty often, not through any fault of the operator, except from a fault in the protection of the gold or in keeping it in good condition.

When we come to work with these metals, as some of us have done, in a chemical and physical way, we come to feel almost as if they were alive. There are certain physical and chemical properties that stand out and certain principles we cannot violate without changing the character of the gold; that is to say, the gold reacts with the other things that may come in contact with it or close about it. It is a sensitive substance, attracting gases or repelling them, and these react upon the gold, so that we need to watch gold very cautiously if we want to obtain the finest results. With almost any of the gold that comes to us we can make a filling that will appear respectable, but if we want to secure the best possible results, which is what every one should strive for, we must be very guarded in our care of the gold. Why is it the crystal golds have not become popular? They have been on the market for many years; they are excellent working golds; their properties are very fine, but their porous nature and the manner of putting them up make them great reservoirs for the collection of gases and unsafe, without the best of management, in keeping. But I have already talked too long, Mr. President.

DR. E. A. ROYCE: I wish I could express myself as clearly as I would like to do at the present time, but I know it will be impossible for me to do so. In the first place, I do not know of any one who advocates taking a solid piece of gold and spreading it to fill the cavity in their general practice, as Dr. Crouse and Dr. Black seem to think. This is simply one of the many laboratory experiments used to prove what can be done with cohesive gold by properly

directing the force that we use in our gold work. Six months ago I heard a dentist say that he had seen one of his fillings which had loosened ten years before, just as he was putting on the last layers of that filling, and that he spread the gold in the cavity and finished his few layers that he had to put on, and ten years later the filling was in perfect condition. I do not know of anybody who is making that a regular practice.

With reference to the use of the oval plugger, my understanding is not to fill a cavity by spreading the gold if it is in a solid mass. The spreading of the gold under the oval point is a great advantage, because if the plugger is properly serrated you cannot draw gold from the wall of the cavity with the plugger point, but the tendency is all the time to drive the gold to the wall of the cavity instead of drawing it away from it. This theory is based upon mechanical principles and can be positively demonstrated, and this principle is made use of by every mechanic except the dentist.

In regard to the use of heavy foils in cavities, I do not advocate them any more. There was a discussion some time ago in which I participated and which induced me to make some experiments with reference to the adaptability of cohesive gold to the walls of cavities, and as I had an idea that this matter would come up to-night, I put the results of those experiments in my pocket, and if they are of any interest to the members I shall be glad to pass the specimens around.

No. 1 is not condensed as thoroughly as the other fillings. It is made of ropes of No. 4, twisted, and finished with No. 40. No. 2 is made of four folded and finished with No. 60. No. 3 is a specimen of a cavity which was cut out by a cross-cut bur to leave grooves; it is made of No. 40 rolled gold. No. 4 is filled with ropes of four and finished with No. 60. I do not claim that every one of these grooves is entirely filled, but I have never seen any flat plugger which would fill well in a narrow cavity, and put No. 40 annealed rolled gold into the grooves in the manner that I put it in those. In one of the cavities I cut along one of the walls with an inverted cone bur, which I think is absolutely and perfectly filled.

The philosophy of using an oval point is that you want your gold to work to the walls of the cavity, and if you direct your force properly your gold will go toward the walls of the cavity and will not be drawn away from them. If you want to carry your gold in front of the plugger point you would not use an oval point, but a flat point.

If Dr. Crouse, for instance, should want to spread noncohesive gold, he would not use a flat point. If he puts in a cylinder of gold and wants to spread the gold to the walls of the cavity, he would use lateral force in the shape of a wedge every time. When he wants to drive his gold into the cavity he uses a flat point, which is the correct thing to do.

With reference to the use of crystal gold I think, perhaps, it may be unreliable. I have been studying the philosophy of working crystal gold a little, and I think that the success attained by a great many dentists in recent years in working crystal gold is due largely to the shape of the plugger points. The gold is light, so that each particle has to travel some distance from the time it is started under compression until it arrives at the state of condensation or at the place where it is to rest. With the oval point the tendency of the particle of gold is not to go straight in front of the plugger, but to get out from under the plugger as you are working it, the particles of gold working toward the walls of the cavity. If you take a flat point with crystal gold and carry the particles of gold immediately in front of the plugger, you do not gain as much in rapidity of manipulation as you would with an oval point. Years ago we worked crystal gold with flat points, and we had lots of places we could not reach and could not do anything with. Since then there has been an improvement in gold, but the improvement in the plugger point has as much to do with it as the improvement in gold, and possibly a good deal more. In finishing fillings, where you want to get a good surface, a flat or nearly flat point is absolutely necessary. Many times an oval point with rounded edges, instead of square edges, will be found of great advantage on account of the freedom of liability to chip the enamel margins when condensing gold over them.

DR. A. W. HARLAN: Permit me to say a word or two about some things that are not connected directly with the subject covered by Drs. Black, Crouse and Royce.

The paper of Dr. Cattell on this subject was a very clear condensation of the subject matter. From some years of experience in the practice of dentistry I should say that a great many fillings are defective in consequence of the manner of annealing gold. It is only a few years ago that electric annealers came out, and many of the younger men and the older ones have not got them in their offices.

With reference to the lamp, a great many dentists pass pieces

of gold through the flame, and unless they are particular in having a clean wick and trim it so as to have no carbon on it, and to light it with a match that has no sulphur on it, they are liable to get contamination in that way. Theoretically, many dentists claim that they either use a mica annealer or an electric annealer, but I have observed in their offices that a great many of them do not use them, and they pass gold through the flame and get contamination. Furthermore, the rubber dam is not scrubbed and cleansed of the impurities that it receives when it is stretched out between the rollers, and they drop a piece of gold on that and then they pick it up and put it into the cavity. That is another source of contamination. In short, there are so many things connected with the introduction of gold into cavities of teeth that unless the dentist is very careful he is liable to have pieces flake off in some unaccountable way, which could be easily accounted for by a little thought. For instance, sometimes a little wax gets around the edge of a cavity inadvertently, but it gets there, and any foreign substance that goes between pieces of gold is liable to defeat the object of making a perfect piece of gold of a specific gravity of 19.3 or something of that sort.

I would like to say to those who are using cohesive gold that they should watch out for the scissors they cut it with; they should watch out for the rubber dam, for the silk, the lamp, the mica and the electric annealer, and see that everything of that kind is in proper condition, then they will be much more likely to have perfect fillings, barring the condensation of gases on the surface, than they do now when they are not particular in those respects.

DR. CATTELL (closing the discussion): I shall be very brief in what I have to say in closing this discussion. The subject of non-cohesive gold and the working of it was not supposed to be in the paper at all. As many of you know, I was taught how to manage and work gold by Dr. Crouse. He likewise taught me how to work noncohesive gold. I have always been a lover of it ever since, and I use a great deal of it. However, that was not the subject of my paper, but the condensation of *cohesive* gold in cavities. I mentioned the heavy golds for the reason that we find them on the market, and I did not speak particularly of their working qualities, how the gold was arranged and carried to the cavity. Dr. Crouse misunderstood some of the points I made during the reading of my paper. Perhaps they were not brought out as clearly as they might have been.

I have nothing further to add, except to thank the gentlemen for the kind manner in which they received my paper.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

THE PIONEERS OF DENTISTRY.

The revival of interest at the present time in the personnel of the pioneers of the profession is a healthy sign of the times. It shows that the profession is awakening to an appreciation of what was done in the early days to place dentistry on a proper footing and give it an honored status in the affairs of men. It is always interesting—or at least it should be interesting—to know something of the characteristics of the men who first gave a definite direction to dental thought, and who sought by unselfish effort to establish our calling upon a foundation worthy of its importance. The work of such men as Drs. McManus, Thorpe, Truman and others, in the way of gathering and tabulating facts concerning the lives of the pioneers is worthy of all praise, and it is a work that was begun none too soon. An evidence of this is shown in the lively interest being taken in the biographical articles appearing each month, and it bespeaks well for the profession when they are thus willing to honor the memory of their illustrious predecessors.

This calls to mind one of the most significant developments connected with the appearance of these sketches, and in many respects it has caused a revolution of thought and sentiment on the part of the profession concerning the origin of dentistry. It has always been taught and harped upon that dentistry was of lowly origin, and merely an offshoot of the barber or blacksmith shops. It has repeatedly been associated with the traveling tinker and jack-of-all-trades, till finally men of discriminating tastes have been loth to say much of the early history of the profession. But the facts are quite the contrary, as is conclusively shown by a study of the men who were prominent in its development in the early days.

It requires only a casual glance at the faces of the portraits recently published to establish for their originals a reputation

for intelligence above the ordinary of mankind. Who can look at the half-tones of such men as Lemaire, Flagg, Gardette, Greenwood or Hudson without realizing that the profession had for its early sponsors men of superior qualities and unusual ability? And it is not only their looks but their deeds which appeal to us. Read the record of their attainments and then see if we of the latter day need blush for our predecessors. They gave a most noble bearing to the early development of their chosen calling, and we have small reason for longer being ashamed of our antecedents. The records being written to-day in loving memory of the men who have gone before must forever silence any reflection which might otherwise be placed upon the origin of the profession, and must give to each practitioner of the present day a more exalted conception of the early traditions of dentistry.

THE EDITOR'S DESK.

THE WEATHER.

For at least a month previous to the present writing there has been more weather to the square twenty-four hours than usually falls to the precious lot of an overtaxed humanity. And it has not been so much the quantity of the weather as the quality which forces recognition. It is really worth studying—this weather. And people have studied it, as they have seldom studied weather before, which is saying a great deal. One individual said to me the other day, "Did you *ever* hear tell of anything like this weather?" I said, yes, that there was a tradition some years ago of a man named Noah, and this weather somehow suggested Noah. The party simply looked out of the window reflectively and murmured, "Poor Noah!"

But the weather has had many good things about it. It has shown us what it can do in an off year—a year in which there is no election. And it has given the people something to talk about. I don't know what we would do without the weather. It is the most staple topic of conversation on the calendar, and one of universal interest to the rich and poor alike. But it is amusing to study the different ways in which the weather affects individuals. I have never seen so perfect a day yet that some one could

not pick a flaw in it. Some like it hot, some cold, some rainy, some sunshiny, some do not like it at all, and others like it all the time. Which latter is the really philosophical point of view, and the one most to be emulated.

For, after all, there is no kind of weather without some redeeming feature; and the logical thing to do is to look for this feature and be thankful. I heard a man say the other day that when he studied the temperaments of individuals and the influences which surround them he was not surprised that so many men went astray. His only wonder was that men were not worse than they were, and I have thought the same might be said of the weather. When we think of the various influences at work to govern the weather, the marvel is that the results are not more disastrous than they are. We do not often enough appreciate our advantages in this world, and instead of continually harping against the weather we should seek to find something favorable about every day that dawns for us.

I once knew a man who had this philosophy. No matter what the weather was like he had a ready argument to prove that it was the best weather imaginable for some particular purpose; and to hear him talk one would fairly believe that no weather was ever in the least out of harmony with the real requirements of the case. His arguments were too long to reproduce here, but his philosophy is strongly recommended for those who are prone to rail against conditions over which they can possibly have no control.

BIOGRAPHICAL SKETCH.

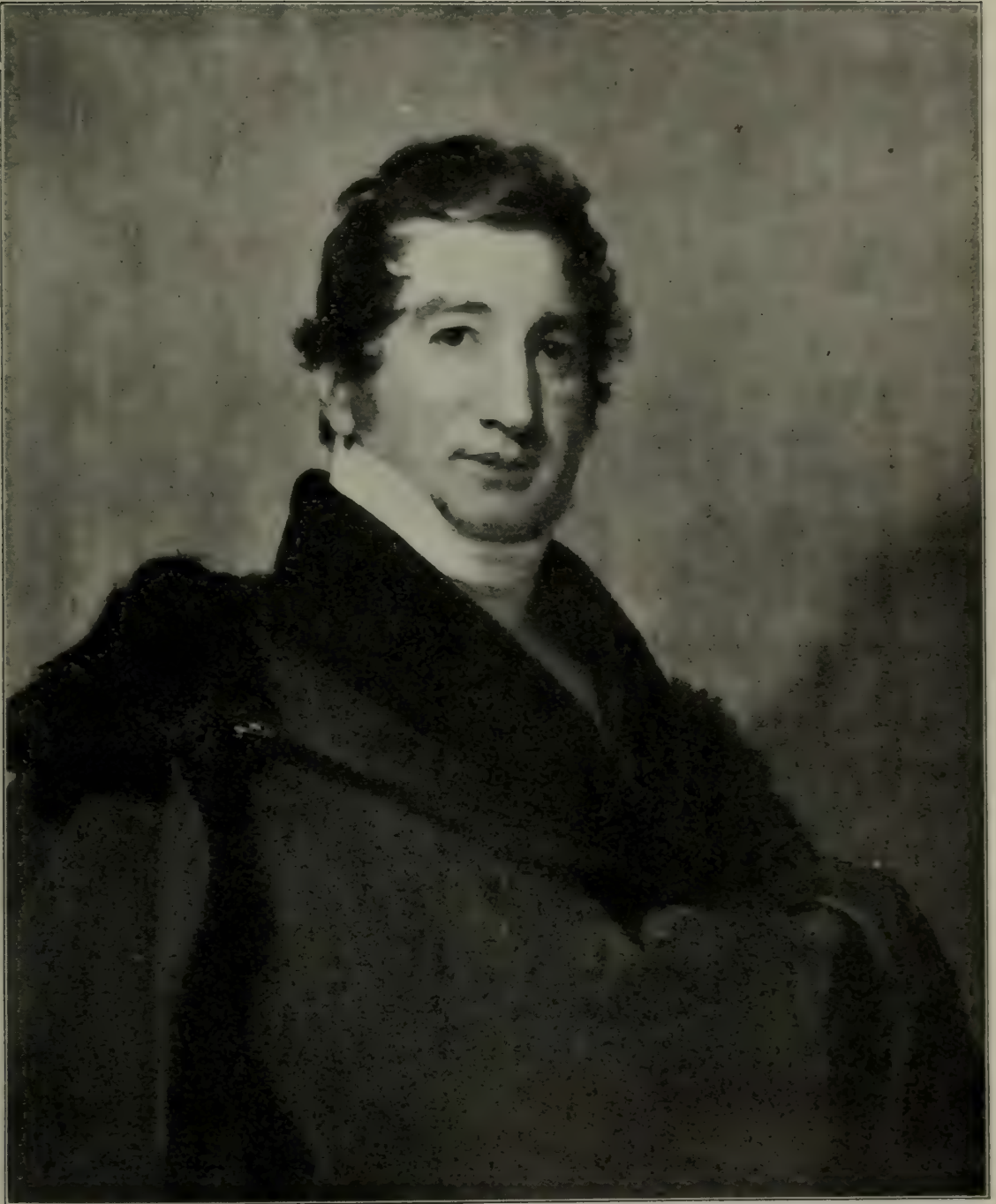
V.

EDWARD HUDSON—IRISH PATRIOT AND AMERICAN DENTIST.

By BURTON LEE THORPE, D. D. S., ST. LOUIS, MISSOURI.

The subject of this sketch was a picturesque character of artistic and musical temperament whose early career was flavored with romantic and historical incidents and whose professional life was a model of excellence and perfectness made so by earnest and conscientious endeavors. Inspired by high ideals and prompted by most honorable motives, he earnestly strove to do well his part—to country, friends and chosen calling.

Henry Edward Hudson was born in County Wexford, Ireland,



EDWARD HUDSON.

October, 1772, of English-Quaker parents, his father being Captain Henry Edward Hudson of the British army, and his mother Miss Jane de Tracey. It is presumed that Hudson's parents died in his early youth, as Dr. Chapin A. Harris says of him: "Hudson was adopted by a cousin, Dr. Hudson, a talented dentist of Dublin, who educated him at Trinity College and later instructed him in dentistry." (1)

Dr. Robert Blake in his essay on "The Structure and Formation of the Teeth in Man and Other Animals," frequently refers to Dr. Hudson (Edward's preceptor) as an ingenious dentist and talented literary man. Thomas Moore, the poet, speaks of him as the "nephew of an eminent dentist of that name." (2) These two statements are conflicting; but the writer believes that Moore is correct and should be taken as authority, as he was an intimate friend and associate of Hudson.

At Trinity College among Hudson's classmates were Robert Emmet, patriot; Thomas Moore, poet; the eloquent Sargent; young Jebb, who afterward became the learned Bishop of Limerick, and others whose names and fame will ever live in Irish history.

With these young men Hudson belonged to several debating societies—which were the forerunners and nursery to the Historical Society—that played so important a part in the Irish Rebellion of 1798. These societies developed the young men and brought out the latent talent of each. Hudson soon gained recognition as a debater and writer.

Filled with the fire of youth, and of patriotism, inspired by the political strife and the turmoil that enveloped Ireland at that time, Hudson was drawn into the "Emmet conspiracy" with Robert Emmet, Thomas Moore, Thomas Addis Emmet, Arthur O'Connor, and other acquaintances of "United Irish Conspiracy" fame. About this time he had arranged to go to London to establish himself in the practice of his profession, but his affiliations and utterances caused his arrest.

Hudson was a Protestant, as were all these leaders, and was one of the thirteen Leinster delegates seized March, 1798, at Oliver Bond's, and for this political offence was imprisoned with his comrades in Kilmainham jail. During this imprisonment, which lasted

(1) Harris Dictionary of Dental Science, p. 369, 1846.

(2) Preface IV Vol. Thomas Moore's Poetical Works.

four or five months, hearing of friend after friend being put to death and expecting daily his time to come, to amuse himself in his solitude, he made a large drawing with charcoal on his prison wall, representing his fancied origin of the Irish harp. Thomas Moore, his intimate friend and confidant, on a visit to his prison saw this drawing, and some years later adopted the suggestion as a subject of one of his best melodies, "The Origin of the Irish Harp." (3) When it was proposed to release the survivors from Kilmainham jail, it was on condition that they should leave for America. To this the American Minister at London earnestly objected on the technical ground that it was an insult to the United States. While they would be welcomed as men, free to go and come, they would be refused a landing as convicts, the government at Washington instructing him that the United States could not be made a convict settlement. With twenty-two other members of the Society of United Irishmen he was taken to Ft. George, Scotland, where he was confined until 1802. During his imprisonment he practiced his calling, serving "the nobility and gentry of the surrounding country," who paid large fees for his excellent skill.

After an imprisonment of four years (being released at the Peace of Amiens), a free man, but not knowing how long he might remain one, he immediately embarked for America to try his fortune. Upon his arrival at Philadelphia, about 1803, two years earlier than all other accounts assert (4), he practiced his profession for a short time, and married a daughter of Mr. Patrick Byrne, a stationer, with whom he engaged in business, soon to fail. He was also engaged in the brewing business, and failed owing to lack of adaptation to commercial life and business judgment. After absolute failure in his business ventures, Hudson resumed the practice of dentistry and passed his remaining days in active professional life in

(3) Preface IV Vol. Thomas Moore's Poetical Works.

(4) This record is from the James Robinson's Philadelphia directories, which were reliable and standard at that time. Hudson's name is not in the directory for 1802, but in 1803 it appears that he was located at 52 South Third St., old number, which would be about Third and Chestnut. In 1806, 7, 8, 9, it reads: "Edward Hudson, dentist, 44 North 5th St." which would be about 5th and Arch Sts. In 1810 it reads "Edward Hudson, brewer and dentist, No. 9 Moravian Alley and 44 North Fifth St." In 1811 "Edward Hudson, brewer and dentist, No. 9 Moravian Alley and 133 Walnut St." In 1813 and later, "Edward Hudson, dentist, 133 Walnut St." In this house he died and from it he was buried.

Philadelphia. He was located for many years and at the time of his death on Walnut street, near Fifth street, in a large house on the site now occupied by the Franklin Fire Insurance Company.

He was married three times, his third wife being Maria Mackie, daughter of Thomas, a son of Peter Mackie, a well-known merchant and importer of Philadelphia. She was the mother of eight children, who bore the name of Hudson. His oldest son, Edward, was a surgeon in the United States army, and died January 23, 1857, aged 37. His other son, Francis Smith Hudson, was connected for many years with the United States Coast Survey.

For more than thirty years Dr. Hudson was a recognized leader of his profession; his talent and skill was an important accession to American dentistry, yet it is not recorded that he made any discoveries of merit or even that he gave freely of his knowledge to his confrères. Dr. Robert Arthur says of him (5): "Hudson practiced pulp extirpation in 1809 and the filling of the roots of front teeth, to the apex with gold."

Herewith is reproduced a photograph facsimile of a dental bill of Hudson's, dated Nov. 28, 1817, in which Hudson charges for "one tooth, one stuffed canal with gold, \$20" (6).

John Bryant Esq Dr to Dr Hudson
1817 Nov. Acct rendered ——— \$22=
Extracting tooth for child at his home 2.
1818 June 25 - Extracting tooth for child — 2.
\$26.
Aug 28 one n. tooth - one stuffed
canal ——— } 20
\$46.
Rec'd in full
Maria Hudson

(5) American Journal of Dental Science, 1850.

(6) Furnished by Dr. William H. Trueman, Philadelphia.

The following is a bill rendered by Hudson in 1824 (7):

Miss Margaret Callender's acct with E. Hudson
 1824 Nov }
 Dec^r }
 1825 Jan^y }
 ap^l }
 8 Extracting eight teeth - Stopping
 8⁹ Seventeen cavities with gold
 10⁰ Stopping the cavity of one tooth from
 the end of its root with gold -
 5⁰ Cleaning her teeth - cutting out
 4⁰ four decays -
 Rec^d. in full Edward Hudson \$112⁰⁰

While some claim Hudson to be the originator of root canal filling, such statement is hardly correct, as it is referred to by writers of a much earlier date. (8) In 1818 Hudson called the attention of the profession to the fact that the teeth of drowned persons or persons hanged turned red. (9)

Hudson received, a few years before his death, from the University of Pennsylvania, the honorary degree of Doctor of Medicine. Thomas Moore pays a fine tribute to Hudson's musical attainments and artistic temperament in the preface of the IV volume of his poetical works when he says: "A young friend of our family, Edward Hudson, the nephew of an eminent dentist of that name, who played with much taste and feeling the flute, and, unluckily for himself, was but too deeply warmed with the patriotic ardor then kindled around him, was the first who made known to me this rich mine of our country's melodies—a mine, from the working of which my humble labors as a poet have since derived their sole luster and

(7) Furnished by Dr. John G. Harper, St. Louis.

(8) Bourdet, Vol. I, Chapter III, pages 114 to 132.

(9) American Journal of Dental Science, p. 213, Vol. I, 1839.

value." The likeness that illustrates this sketch is from a portrait by Thomas Sully painted when Hudson was a young man. (10)

Dr. Edward Hudson died after a brief illness "on Thursday morning, January 3, 1833, in the 60th year of his age" (11), and was buried Saturday, January 5th, in the churchyard of old St. Peter's Church, which church he and his wife attended during their life. The following is inscribed on his tombstone:

"Edward Hudson, M. D., Dentist. A native of Ireland and for more than thirty years a resident of this city, died January 3, 1833, in the sixtieth year of his age. Distinguished in his native land as an enlightened lover of freedom, he was the confidential friend and fellow sufferer of Emmet and O'Connor. In the land of his adoption, prominent in his profession, his manly virtues and rare attainments won the love and respect of all."

Hudson was succeeded after his death by Dr. Lewis Roper.

Without doubt Hudson was the best educated, most talented and successful dentist of his day; of striking personality and strong personal magnetism. His whole career was filled with romantic devotion not only to the cause of Irish freedom, but devotion to the ideals of his life and those he loved. His only living relative writes me: "From the adoring love which the children whom it was my good fortune to know, always expressed for him and the high regard he seemed to have enjoyed he must have been an admirable man in every way."

His honesty was of the highest type. It is said of him that after his failure in mercantile life, he was not content until his creditors were paid in full every cent that was due them, although by law these debts had been settled by payment of a percentage.

In summing up his life's work we believe he played the roles of gentleman, scholar, patriot, and ideal professional man with grace and dignity.

(10) Furnished by Dr. Louis Jack, Philadelphia.

(11) United States Gazette; Philadelphia, Jan. 4, 1833.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

NEW YORK, July 1, 1902.

MY DEAR MR. EDITOR:

Your correspondent attended the thirty-fourth annual meeting of the Dental Society of the State of New York at Hotel Ten-Eyck, Albany, on May 14 and 15, and met practically the same contingent that has graced this assemblage year after year.

The program was very interesting and the essayists numerous. The variety of subjects, too, was good and held the attention of all unusually well.

The meeting was called to order shortly after ten o'clock of Wednesday, the 14th, by the president, Dr. John I. Hart, whose address contained some good recommendations which were turned over to a special committee, of which more will be said later.

The report of the correspondent, Dr. Hatch, of New York, dealt mainly with the subject of Dr. D. D. Smith's (of Philadelphia) work of cleansing the teeth. Dr. R. Sanger, of New Jersey, detailed his visit to Dr. Smith's office recently, where he saw a number of his patients which certainly showed good present conditions orally, whatever their previous condition may have been. Dr. Sanger said the patients were eulogistic of the accomplishments.

Quite a party, evidently, visited Dr. Smith, among them Dr. S. G. Perry, of New York, who became a martyr to the cause and permitted Dr. Smith to remove calculus from his teeth, and cleanse them by his method. Dr. Perry says the system is certainly heroic.

Dr. R. H. Hofheinz, of Rochester, speaking to the subject said he thinks he does similar work but does not see how external stimulation of the teeth can affect the internal structure as claimed by Dr. Smith.

Dr. A. E. Webster, of Toronto, Canada, had something to say relative to professional ethics which was terse. In part it was to the effect that the man who had labored at some other occupation is as a rule the man who cannot be educated ethically. He is very likely to bring with him the practices and principles of a trade.

Dr. Rhein had to say about the Smith method, that the continual cleansing removed the bacterial plaques which form on enamel, as shown by Williams.

Dr. Ottolengui said that it is barely possible that Dr. Rhein was wrong and went on to cite that of 1,000 dried extracted teeth, they were all practically the same color. Implanted teeth assume the color of their neighbors. He argued that it seems the color of teeth depends on what they absorb from secretions of the oral cavity.

Dr. Sanger, in speaking further, said the white marks on teeth were not on the surface but were similar to those which appear on the nails indicating lack of nutrition. Upon persistent stimulation of the enamel these gradually disappear. This to the writer is erroneous.

Dr. F. W. Low said, relative to Dr. Smith's work that the woman assistant is the person to clean teeth as they appear peculiarly fitted for this work.

He termed her an odontocure and pictured the future, when the woman assistant would visit the homes of patients regularly, caring for and cleansing their teeth. This really would establish a new department in our profession.

The subject of the proposed substitution of D. D. S. for M. D. S. was brought up at this hour by Dr. Wm. Jarvie, of Brooklyn, who deplored the fact that the treasurer of the State society (Dr. Stainton) should write the Board of Regents over his official signature and wilfully misrepresent the committee in charge of that function.

Dr. Jarvie and his associate committeemen are for the unification of the dental degree. Dr. Jarvie holds the M. D. S., and says he would reluctantly relinquish the M. D. S. for the D. D. S., but believes the change would be good. The question arose as to the M. D. S. being an honorary degree, some claiming the examination of the Board of Regents higher than that of the colleges. No more degrees M. D. S. are conferred in this State. Retired in 1895.

Dr. Stainton, the accused treasurer, read his letter to the Board of Regents; he made a poor defense of the attitude he assumed. There was also read the Board of Regents' letter to the society, which inferred that they suspected collusion somewhere.

Dr. Ottolengui styled the Board of Regents' letter as of arrogant assumption and meddlesome interference. They could not possibly understand the situation.

It has been said that the M. D. S. was not fitted to properly practice. Dr. Ottolengui challenged any one to show where there is an M. D. S. running a dental parlor. Finally Dr. Jarvie offered the resolution—"Resolved, that the Board of Regents be requested to recall all M. D. S. certificates and substitute the degree of D. D. S. instead."

Roll call ballot showed that Dr. Jarvie was sustained by the members by a ballot of 61 to 20. The only college representative present voted in the affirmative. This resolution is to go to the Board of Regents.

Dr. A. E. Webster, of Toronto, Can., was called upon and read his essay on the "Comparative Value of Ordinary Sealings of Root Dressings as Excluders of Moisture." He began by saying that no finality had been reached, no positive conclusions, but might be termed a report of progress gathered from a few pages of his record book.

Hundreds of test tubes, very small, had been prepared, treated as carefully as his scientific knowledge would permit before being filled with agar, then sealed with the various dressings, after which they were subjected to a series of tests.

The only material which resisted infection (and that not in all cases) was chloride of zinc. A few of the other materials used in his experiments were gutta-percha (temporary stopping), oxyphosphate of zinc, cotton and sandarac, sterilized vaseline, benzo-balsam and cotton, oxychloride zinc and some of the essential oils and gutta-percha.

Dr. Rhein said that in Dr. Webster's paper there is little one can discuss and that his deductions are not similar to clinical experience.

Dr. Head said that perhaps personal equation played a great part in filling of pulp canals and tubes.

Dr. Hofheinz considered gutta-percha, although a leaky material, not a valueless one.

Dr. LeRoy said that the contraction of gutta-percha after being heated for insertion into a cavity, probably makes it shrink enough to permit of infection of pulp canal contents, also that

contractions of cements after heat developed by chemical activity, while crystallizing, would make that material leaky.

Dr. Webster said, in conclusion, that he was pleased at criticisms made and the many suggestions would certainly prove of benefit in future work.

Dr. R. H. Hofheinz, of Rochester, N. Y., read a paper on "Extension for Prevention," the opening paragraphs of which referred to that immortal chapter of Dr. Webb's, written in 1875, where Dr. Webb recommended extension of a cavity, etc.

He sustained Dr. Black by saying that he nowhere recommends cutting away except where conditions make the enamel especially unsafe.

He said further that all areas that are self-cleansing are not immune, and that immunity was relative always. Has a mouth not kept properly clean any self-cleansing surfaces?

In acid conditions of the mouth gold fillings are contraindicated. Teeth fail whether cavity has been extended or not.

Then the doctor dwelt at much length upon the cleavage problem and illustrated the long and short enamel rods.

Dr. Jarvie said: "Approach cavities of decay with judgment." Ah! if they were all approached that way. He cited the artist who remarked when asked what he mixed his colors with to get such beautiful results—he said: "With brains."

Dr. S. S. Stowell, of Pittsfield, Mass., also read a paper on "The Practical Side of It." At the outset he expected to be ridiculed, so he said. He was dealing with one of the two great questions—religion and medicine. He quoted as absurdities a few biblical stories—such as "woman being taken from the side of man," "Jonah and the whale."

Dr. Stowell believes that the use of most drugs is harmful. In treatment of pulp canals, the use of alcohol or water is sufficient to cleanse, after which fill with gutta-percha. If you have done your work properly, neither God Almighty, Mrs. Eddy, nor any man can do more. He has not seen a case where antiseptics, tooth pastes, or lotions made the teeth more immune than where only water was used. "Did our forefathers use antiseptics?"

Said Dr. Sanger in discussion: "I question whether if you went into Dr. Stowell's office you would find the medicine case empty. It is not the show of drugs, as Dr. Stowell implies, but

the proper use of them, and the relief given the patient, which impresses."

Dr. Sol. Freeman's memory of some of Dr. Stowell's practices seemed good, for he asked whether the doctor still uses *hydro-nepthol* in his alcohol in filling root canals.

Dr. Stowell finally admitted he sometimes used a little.

Those who discussed Dr. Stowell's paper failed to treat it seriously, which somewhat disappointed the Doctor, for there is an impression that he expected to "have some fun" with some one.

Considerable discussion took place at this session relative to having dentists *appointed* in New York State Charitable Institutions. Dr. W. C. Drane believes it will be done this year, so if there are any who would like such appointment they can get information on the subject from the chairman of the committee.

Dr. W. V-B. Ames, of Chicago, presented a very interesting paper on "Cements." He said that some seem to regard the chemistry of cements as settled. It is far from it.

The trend of improvements to-day is in the production of a hydraulic cement without sacrificing any other qualities, and we are likely to get it, too.

The time has passed when the opinion is that cements are better when kept dry after insertion in cavity. The more finely a cement is powdered the quicker it sets.

The infinitesimal amount of arsenic in zinc cement as a factor in devitalizing pulps should be dismissed forever. Oxyphosphate of copper is extremely bland when used near the pulp or against gum tissue.

Dr. Ames considers the oxychloride of zinc par excellence for cavity lining used *over* pulp capping.

Dr. Low, of Buffalo, reported as one of a committee on investigation of clinical and laboratory experiments on this subject, that Archite cement did not show favorably. Wilcox's was the most impervious, Ames' crown and bridge, excellent for the purpose, and Ames' oxyphosphate showed very good.

A letter from Dr. Gillett was read in which he said he does not use cements much. The oxyphosphate of copper of Ames is doing favorably.

Dr. Head said that the saliva seems to dissolve everything in sight.

Dr. Hofheinz found one point in which he could disagree with Ames and that was the oxyphosphate of zinc. Its affinity for moisture as well as its escharotic effect makes it the *most* dangerous filling material we have.

Dr. Joseph Head, of Philadelphia, was also essayist at this session. The title of his paper was "Porcelain Crown and Bridge Work from the Hygienic Point of View." It was a short terse expression of facts relative to bridge work—removable—of which he showed two practical cases made of porcelain. His admonishment against permanent bridges was very strong.

He also said that although we had been able to teach Divine Providence many things, in general He knows His own business best. Bridge work is no improvement on nature. There could be very little discussion on such a practical paper wherein the cases presented seemed to answer all questions. Furthermore the president did not court it, because of the approaching termination of the session, probably.

Dr. Leo Greenbaum, of Philadelphia, was not present to read his paper on "Root Fillings and Their Relative Value." Dr. Turner, of Brooklyn, was requested to do so.

He said in part, that the acetate of eucaine causes swelling of parts upon injection, and that root fillings as a rule are not the success that they should be.

The only real advance he sees in the past twenty-five years is the Callahan sulphuric acid method of cleansing canals, the Soderberg mummification of apical filament and the pulp digestion by papain, as explained by Dr. Harlan.

In his first series of experiments he devitalized healthy teeth and with the antiseptic precautions used, got negative results.

Second experiments, using Callahan method, also gave negative results.

Third series, the mummification, most all failed and showed action of remedy about one-third way only on pulp canal.

Fourth series of experiments by digestion, gave negative results in all but one case.

Caroid solvent (similar to papain but more powerful) was also used, of which he reports very favorably. It is a new drug.

The digestives whiten and apparently bleach teeth somewhat.

The session was nearing its close at this point and the busi-

ness of the meeting became expedited. It was time, too, to think of the new staff of officers. Some electioneering had been done so that we knew pretty well how the wind was blowing. Everybody seemed satisfied that the "slate" was a good one and that the interests of all the district societies could not be entrusted to better hands. The chairman, Dr. John I. Hart, made the announcement that "the next order of business will be the election of officers, and nominations are called for."

Dr. R. H. Hofheinz, of Rochester, was named for president and after a few moments wait to give opportunity for other nominations, it was moved that the nominations close and the secretary be instructed to cast one ballot which was done, making the election of Dr. Hofheinz unanimous.

The same procedure was gone through for Dr. W. J. Turner, of Brooklyn, for vice-president.

Dr. W. A. White, of Phelps, N. Y., for secretary, Dr. C. W. Stainton, of Buffalo, for treasurer and Dr. H. D. Hatch, of New York, for correspondent. The only change of staff was in the offices of president and vice-president.

The meeting adjourned about noon of the second day's session, the society having concluded all business in the four sessions, morning, afternoon and evening of first and morning of second day. Very truly, "THE BOROUGHES."

EDITOR DENTAL REVIEW:

May I have a little space for a reply to Dr. Haskell's communication which appeared in your magazine for June? Although Dr. Haskell does not mention my name, he quotes from an article by me:

"1. Now, it has been the sad experience of dentists that the mere fitting of a plate over an accurate reproduction of the surface of the maxilla will not invariably yield a plate that will stay in position.

"2. I know of none who feel that they can rely upon merely fitting a plate over an anatomically accurate model."

To these two statements Dr. Haskell replies that such has not been his experience, etc.

Evidently the doctor has not carefully read that to which he makes a reply. I have stated that it has been the experience of dentists that the mere fitting of a plate to an accurate model will

not *invariably* prove successful. Dr. Haskell has apparently overlooked the word "invariably." For he tells us that with an accurate model he can obtain adhesion, "*provided the plate does not bear on the hard center.*" Just so! And because plates so often do bear on the hard center I was justified in the statement made, including the word "invariably."

Dr. Haskell further says "The writer (meaning myself) once told me that he never put in a denture without a suction chamber that was a success." I do not doubt that I am here correctly quoted, but such a remark, coming from myself, is no argument for or against suction chambers. I am no expert in the matter and have had comparatively little experience. While the statement was undoubtedly true when made, it must also be admitted that at that time probably I had never fully comprehended nor applied the principle involved in obtaining adhesion without a suction chamber. I hope I am learning, however. I have not used a suction chamber at all this winter, and in the case which seemed most unpromising I surprised myself by obtaining the best result. The mouth had been utterly ruined (as I thought) by a rubber plate with deep suction chamber. The roof was flat and flabby with a horrible excrescence due to a deep chamber with sharp edges, and all of the ridge in the incisal region on one-half of the maxilla had been lost by absorption. I used a broad relief equal in thickness to number sixty tin foil and obtained a gold plate which rested immovably during all the excursions of the lower jaw, notwithstanding the need of unusual prominence in the incisal region. We live and learn; at least we may, if willing to heed advice.

Truly yours,

R. OTTOLENGUI.

A CRITICISM.

TO THE EDITOR:

The January number of THE DENTAL REVIEW contained a review of MacDowell's "Orthodontia," written by Dr. C. E. Bentley, in which the book is unconditionally approved. This review is so biased in favor of the author, in the face of so many glaring defects, and the book itself is such an evident adaptation of the work and ideas of others, and particularly those of Dr. Edward H. Angle, that I cannot allow this review to pass without a protest.

After patiently waiting in vain for others to rebuke this approval of literary "bushwhacking," and after giving the work careful study to discover whatever new or useful points it might contain and only finding fresh mistakes, inaccuracies, and thinly disguised copying, I must ask in simple justice to other authors that you give this criticism a place in your pages.

Dr. Bentley must be a violent partisan indeed of Dr. MacDowell's when he can say it is "one of the most complete text-books that has yet been written upon the subject of orthodontia." I do not know whether Dr. Bentley is unfamiliar with orthodontia and its literature, or unfamiliar with the book he has reviewed, but under either circumstance his review could hardly be more at variance with the facts.

The book really falls far short of the high distinction of being a "complete text-book," but in one respect it surpasses anything in its line. For bad grammar, bad spelling, bad punctuation, bad diction, bad construction of sentences, and in the use of new and strange words that mean nothing, it *does* stand alone, without a peer or serious competitor in all the realm of dental and medical literature.

As partial proof of this, not a single page can be said to be free from errors, and many pages contain a large number. The following are a few of the blunders, among numerous others equally bad. "Interapproximate" for approximal; "mesial-buccal" for mesio-buccal, and "distal-buccal" for disto-buccal; "hespath" blowpipe for herapath; "Mallot's" metal for Melotte's, etc.

The use of the word positioned (which is found in neither Webster or Worcester) in place of located or situated, is a favorite term with the author; also "occlusional" in place of occlusal. Neither of these words has the sanction of usage, nor the warrant of following the rules of construction, yet they are introduced in many places with evident relish; as for instance, "the teeth are positioned around the marginal edges of the jaw" (page 16), "each tooth * * * is positioned in approximate contact with two teeth" (page 29). On page 17 occurs "the occlusional contact of the anterior teeth is nil," and on page 18 this incorrect term is introduced four times in ten lines, and so on throughout the book.

Various other incorrect terms are introduced, as the teeth of

reptiles "interlace" (page 15), "occlusional width" (page 20), "the arena of the oral cavity" (page 30), "incline" planes for inclined, "distal" for distally, and others of similar kind on almost every page.

The "so-called imaginary median line" is mentioned on page 42, and the "subintermaxillary bone" on page 35. This bone must be a recent addition to the anatomy of man, as no one ever heard of it before.

The ambiguity of many sentences is a marked feature of the book, which the following serves to illustrate: "In the occlusional contact of both the temporary and permanent cuspids, there is a marked change in the position of the occlusional contact, which is a splendid aid and guide in remembering the normal occlusional contact of the teeth" (page 37). Again, "because of the similarity of the temporary laterals and cuspids to those of the permanent set, which when retained late in life often cause doubt as to their identity, and liable result." Many other sentences and phrases, equally meaningless, could be quoted.

Many inaccuracies of statement are made, and in all subjects treated upon. Only a few need be noted. "All the permanent teeth are larger than the temporary" (page 39), yet the temporary second molar measures 8.2 millimeters mesio-distally, while its successor, the second bicuspid, measures but 6.8 millimeters. The book states: "The teeth of man are arranged in a "semi-circle" (page 27), and again refers to the teeth "forming a semi-circle around the arch" (page 29). These are very loose statements for an author trying to establish the fine points of occlusion.

These are but a few of the dozens of similar blunders throughout the book. The climax of inaccuracy and error comes on pages 26 and 27, where thirty-five infractions of the rules of correct construction, or other errors, occur in thirty-four lines. Dr. Bentley "can see no good reason why it should not become a text-book in our dental schools." Yet a high school boy seeking admission into these same schools would be rejected if he wrote an examination showing such a deficiency in English, or such an abundance of errors of statement and of fact. Certainly as high a standard should be required of a text-book, written by a professor, as is demanded of a freshman student.

Yet a book should not be condemned wholly for the reason that its diction is bad, or its grammatical construction faulty. It still might have redeeming qualities, especially if it contained new and valuable ideas, as certainly all books having any just claim for recognition should possess. But after careful study of Dr. MacDowell's book, there is not revealed a single original suggestion of merit. I challenge proof to the contrary. The thoughts of value can all be found in the writings of others, and found, too, in language far more clear and in better keeping with the "King's English."

The plan of Dr. MacDowell evidently has been to disguise the thoughts found in Dr. Angle's book (published nearly two years ago) by clothing them in his own language, and, by additions or changes to give the idea of novelty, to pass them off as his own. This may seem a severe criticism to make, but I am sure this impression must *often* be forced upon any one comparing the two books, and I feel it is entirely warranted by the evidence.

It is true he has not depended wholly upon Dr. Angle's book, but to promote the idea of a broad comprehensive work, the author has given a smattering of the methods of Drs. Jackson, Case, Knapp and others, although only a smattering. The result is that those who seek to familiarize themselves with the methods of these gentlemen must only be confused, and neither these authors nor the student can feel satisfied.

But the manner of this and other copying is sufficient to rouse the wrath of every believer in honesty in literature. Not only are ideas taken bodily and disguised—sometimes thinly, sometimes so effectually by language so rambling, vague, and incoherent as to make them unintelligible—but the ordinary credits given other authors for their ideas are denied, seemingly as much as possible. Quotation marks are omitted, credit for cuts and charts is sometimes denied altogether, and when credit is allowed, it is frequently given in such an underhanded way as to be practically no credit at all.

Dr. MacDowell's classification is an especial example of borrowed ideas, for the so-called changes that he makes from Dr. Angle's original classification do not disguise the source in the least. The necessity for any change is purely fanciful, as the changes made are all covered in the original, and in a plain and practical manner. Dr. Angle is entitled to the credit for *any*

classification that has as its foundation the occlusion of the teeth and the relative position of the two jaws, for he is the undoubted originator of this idea. The mere juggling of a few words does not constitute a new classification by any means.

Dr. MacDowell has given some pages to the comparative anatomy of the teeth, in which he is also liable to the charge of copying, and where, also, on account of so many inaccuracies, misstatements, and a failure to show any connection between orthodontia and comparative anatomy, this part of the work fails to be of any scientific value. Indeed, it is doubtful if comparative anatomy should form any part of a work on orthodontia at all. It is too great a subject to be treated in so superficial a manner. Better for the student to study the comprehensive and excellent works of Owen, Tomes, Thompson, etc., together with the skulls of animals.

One other matter should be noticed to show the inaccuracy and untrustworthiness of the work. This is the chapter on the X ray, a matter favorably noticed by Dr. Bentley. In this chapter nearly all the pictures have been "doctored." A genuine radiograph of the teeth does not show a white line surrounding the roots; in the book nearly all the pictures show this, which presumably has been retouched in with the pencil upon the negative where Dr. MacDowell guesses the teeth ought to be. If guessing is in order in a scientific work, guessing without the X ray would, perhaps, be as reliable as with it. The marks of the retouching pencil are plainly seen in Fig. 108, B, as, also, in Fig. 103, A, and in others. Fig. 105, B, has been doctored otherwise, as here the teeth appear illuminated against a dark background, the result of "correction," as the teeth appear as shadows in the genuine article. The X ray must not be condemned because of this fraud, for it is a necessity in orthodontia; but an author who will "fake" in such a subject cannot be very reliable elsewhere.

To sum the matter up, Dr. MacDowell is only a copyist. His ideas on comparative anatomy are copied from Tomes and Thompson. His ideas on impressions and model making, soldering, banding teeth, classification, diagnosis and treatment are all taken from Dr. Angle's book, and badly copied at that. The expansion arch and its combinations, which he has largely used in the treatment of his cases, is taken from Dr. Angle, and without credit.

The pen drawings illustrating his treatment are original with the author, however. There can be no doubt of originality there, for the anatomy of the teeth and proportions of the appliances put them in the same class as the author's grammatical construction and X ray pictures. With the perfection of modern engravings, half-tones, etc., as well as their inexpensiveness, there can be no excuse for such crude pen sketching, which always leaves doubt as to the truthfulness of both teeth and appliances, and compels the student to guess at many of the details, as they cannot be represented by such primitive means.

There is no excuse for such a book, except to flaunt the author's vanity. The beginning is a tangle of words. The body of it is a copy of the work of others, in which he tries to make a paraphrase of the language, straining here and there to make his methods different. His ventures in the coining of new and formidable words are stilted and ridiculous. The work is full of errors of all kinds, which no amount of proofreading can eliminate, for to correct would be to rewrite. There is no use for such a book, neither for the material got together, nor for the manner of getting.

Then why this glowing approval of such a work, with all these evident defects and inaccuracies? Either Dr. Bentley has praised the book "to please a friend," or else has attempted to review a work upon a subject about which he knows nothing. If the first, he should remember that a book reviewer's first, last, and only duty is to tell the truth, not to praise his friends. In the latter event, he is to blame for accepting a task for which he is not qualified.

And this leads me to protest against the general practitioner presuming to speak with authority in matters concerning orthodontia. Is it not time that general practitioners should realize that they know nothing of the orthodontia of to-day, and that before attempting to either practice it or preach about it they should familiarize themselves sufficiently with it to at least manifest judgment beyond that of children? Owing to the fact that orthodontia has always been a side issue in general practice, almost anything is printed and accepted, simply because the ordinary practitioner is not well enough informed to discriminate between truth and error. For this reason the same old things are hashed over and over in different disguises, and mechanical

absurdities and monstrosities pass current in orthodontia that would not be considered for a moment in any other branch of dentistry. Is it not time for somebody to wake up and look around?

Then such books as the one under consideration would neither be written nor praised. What must our European critics think when they read this book, and also read Dr. Bentley's review to the effect that it is the leading work on orthodontia? What must they think of the movement to secure recognition for American diplomas, when they remember that this author is a professor in one of our colleges? Such a book is no credit to orthodontia or to the profession.

WILLIAM J. BRADY.

IOWA CITY, IOWA, June 30, 1902.

COLLEGE COMMENCEMENTS.

UNIVERSITY OF SOUTHERN CALIFORNIA, COLLEGE OF DENTISTRY.

Graduates for 1902: Emmer Bowman Arnold, Ygnacio Roldan Carrillo, George Augustus Comte, John Walter Gray, Charles Clinton Heller, Edgar Dewey Hiller, T. Houston Lowers, William Beverly Mason, George Erastus Mosher, Ralph Waldo Nelson, Walter Edgar Schott, Will Elisha Sibley, Minnie Madaline Steinhilber, Edwin Bertram Van Wormer.

WESTERN RESERVE UNIVERSITY, DENTAL DEPARTMENT.

Graduates for 1902: William Roy Brewster, George Lynn Carbon, Elmer Elsworth Chambers, Joseph Anson Coates, Ralph Edmund Davis, Lee Lamont De Arment, Alfred Lawrence Duff, John Wilson Fairbanks, William B. Graff, M. D., Herman Douglas Graham, Charles Brigham Hawn, George Hugh Irwin, Richard Kitzsteiner, Ralph Nosker Leonard, Walter Mitchell Leonard, Clinton Edward Line, James Calvin McConkey, John McKerrall, James Scott McLean, Lyman Allen Messecar, Albert William Nicholson, Thomas Guy Patterson, Albert C. Plant, Otto Henry Reisser, Herman B. Rosenwasser, Ralph Edward Sadler, Ira Maphis Saum, William Otto Spieth, Oscar Frederick Strong, Howard Oclydes Wearstler, Archie Leon Wood.

COLLEGE OF DENTISTRY, UNIVERSITY OF MINNESOTA.

The following is the list of graduates for 1902: Arthur Barrett Allen, Dexter Sterling Bacon, William Farnsworth Bettschen, Thad Sheridan Beede, Ole Bolstad, William Allen Caine, Cyrus Joseph Carter, Charles Ray Crandall, Lawrence James Fish, Freeman Fowler Fletcher, Julius Lavine Gunderson, Carl Edward Hickman, Nelson Lionel Johnson, Carl Sophus Jorgens, Eugene William Kaliher, William Sherman Lindsley, Fred Sophus Meyer, Daniel Ralph Miller, Alfred Tion Oberg, Walter Norman Palmer, Harry Granger Peregrine, Plymouth Oscar Peterson, Aubrey Herbert Russell, Benjamin

Arthur Sandy, John Schacht, William Peter Seaquist, J. Floyd Tifft, Alexander Samuel Trondson, Edward Warden Turner, Albin R. Vanstrum, Edwin Frank Wanous.

OHIO COLLEGE OF DENTAL SURGERY—DEPARTMENT OF DENTISTRY, UNIVERSITY OF CINCINNATI.

Names of Graduates, 1902: R. M. Andruss, G. R. Apfelbaum, W. J. Arink, W. B. Armstrong, F. S. Ball, J. R. Barg, M. E. Beinhart, A. F. Beneke, G. S. Brooks, R. M. Brooks, A. F. Brunow, G. E. Bryson, W. L. Bumgardner, R. E. Burbank, F. Burger, F. V. Butcher, B. E. Canfield, C. D. Carley, H. E. Caswell, C. A. Chambers, E. G. Cole, H. R. Collier, A. F. Constien, W. T. Davis, W. C. DeHart, J. B. Dill, E. J. Driehs, E. J. Early, J. C. Elder, W. W. Ewing, Miss A. Feuerstein, L. C. Flack, F. C. Foster, J. F. Givan, J. B. Glenn, Miss N. Goodwin, J. D. Gordon, H. W. Grant, J. G. Hall, G. W. Harness, V. E. Hayne, J. T. Hedges, A. M. Helm, J. E. Herman, W. S. Herndon, G. A. Hickman, R. L. Huey, H. M. Jordan, E. H. Kahn, P. N. Kestner, R. H. Langdale, T. R. Levan, J. M. Logan, C. Longenecker, J. C. Longfellow, C. F. Ludy, H. R. McAnally, G. B. McClintock, J. R. Merkel, D. M. Mason, H. B. Mathiot, W. Matthews, Miss M. D. Meek, R. S. Millman, H. C. Parrott, R. E. Petty, E. M. Poole, C. A. Pride, M. E. Reardon, W. J. Richmond, R. L. Rigdon, H. H. Schmidt, E. M. Scott, C. W. Smith, R. D. Smith, D. G. Stafford, E. G. Stamper, E. W. Stratemeyer, L. G. Straus, E. W. Swinehart, Chas. Swope, T. R. Urmston, R. J. Ward, L. C. Weimer, R. K. Wood, A. H. Woodward, E. M. Woolgar, C. L. Yoders, R. C. Young, W. A. Zeter.

THE UNIVERSITY OF MICHIGAN, COLLEGE OF DENTAL SURGERY.

List of graduates for 1902: John Frederick Allen, Morris Aloysius Anglim, Clarence Charles Bowen, Russell Welford Bunting, John Oscar Butler, Edward Beach Caldwell, Ralph Aretus Calkin, James Rolland Cannan, B. S., Tri State Normal College; Fred Martin Capron, George Chalmers, Charles Jeffrey Colling, Walter Leon Crego, Frank Leo Cunningham, Lewis Ward Curtis, Percy Lewis Day, William Dick, William Patrick Finlan, Perry Layfield Fritz, William Fuller Gates, William Edward Haller, Charles Adams Hawley, Cyrus B. Hayner, Frederick Louis Hermann, Harold Lee Howver, Matthew Edward Kearney, William Charles Kinietz, Joseph Henry Kirby, Stanley Morris Kirby, Harry Gardner Kittell, Arthur Barnard Lawson, Arthur William Lewis, Carlos Joseph Light, William Millard Lyle, George Malcom Madden, Stuart Anthony Mercer, Allan Singleton Moore, Hugh Edwin Neelands, Arthur John Norman, Lura Frances Owen, Harry Oliver Quackenbush, Fred Sterner Randles, Shirley Abner Randolph, Orrin Riemenschneider, Eldred George Robbins, Guy Porter Saville, Maurice George Skinner, Andrew Gregor Smith, Shilon Selwyn Smith, Ernest Edgar Snow, Frank Rutherford Snow, Roy Lee Spaulding, William Frederick Spies, George Albert Stegeman, James Robert Stewart, Edwin Freeman Swinehart, Clarence George Taylor, B. S., Worcester Polytechnic Institute, M. E., *ibid.*; Henry Wensel Tobias, Frank Vandeburg, Ph. B., Vern Margaret Van Fossen, Otto Clemens Vogeli, Marcus Llewellyn Ward, Louis Gordon Watkins, Charles Morris Welch, William Henry Weybright, Jonathan Charles Whatley, Frank Henry Wilkinson, Frank Edwin Williams, Albert Crosswell Wilson, Erick Zincke.

MEMORANDA.

DR. A. V. ELLIOTT.

Dr. A. V. Elliott, of Florence, Italy, is dead at the age of sixty-five. Dr. Elliott was a brother of Dr. W. St. Geo. Elliott, and was highly esteemed in Florence and Lucerne, Switzerland, where he had a summer practice.

VIRGINIA STATE DENTAL ASSOCIATION.

The Virginia State Dental Association will meet at the Hygeia Hotel, Old Point Comfort, Va., August 5, 6 and 7, 1902.

Visiting dentists will receive cordial welcome.

J. HALL MOORE,
Corresponding Secretary.

THE G. V. BLACK DENTAL CLUB.

At the annual meeting of the G. V. Black Dental Club, of St. Paul, held at Austin, Minn., June 20, 1902, the following officers were elected for the ensuing year: President, Dr. S. Bond, Anoka, Minn.; vice-president, Dr. J. M. Walls, St. Paul, Minn.; secretary and treasurer, Dr. Robert B. Wilson, St. Paul, Minn. Board of Censors: Dr. A. C. Searl, Owatonna; Dr. G. F. Andrews, St. Paul; Dr. A. M. Lewis, Austin.

\$10,000 EACH TOOTH—RUSSIAN OPERA SINGER GETS \$50,000 FOR DAMAGES IN RAILWAY ACCIDENT.

VIENNA.—Mlle. Sarkisova, a Russian opera singer, was travelling some time ago on the Transcaucasian Railway, when the train ran off the line and five of her teeth were knocked out.

Mlle. Sarkisova brought an action against the railway company, claiming that as the loss of five front teeth prevented her from singing she was entitled to heavy damages. The Civil Court in St. Petersburg has just awarded her \$50,000 compensation.—*From the European Edition in the Herald.*

A PLEASANT OUTING.

The June meeting of the Odontological Society of Chicago was held in Madison, Wis., on invitation of the Madison Auxiliary of this society, and a most enjoyable and profitable time was had at the capital city. The Madison contingent sustained their reputation for hospitality, which is no small tribute in view of their past efforts in this line. To go to Madison as the guests of their society means a royal welcome and unlimited entertainment, and space alone forbids a detailed recital of all their courtesies.

A pleasant feature of the occasion was the presentation of a beautiful traveling bag, umbrella and cane, suitably engraved, to Dr. A. W. Harlan, the founder of the Odontological Society, on behalf of the members.

The gift was especially appropriate at the present time on account of Dr. Harlan's prospective trip to Europe to attend the meetings at Stockholm, next month. It was the generally expressed wish that Dr. Harlan should carry this memento wherever he goes, as a reminder of the esteem in which he is held by his associates in the Odontological Society.

HARVARD DENTAL ALUMNI ASSOCIATION.

At the thirty-first annual meeting of this association held June 23, 1902, the following named officers were elected for the ensuing year: President, Luther D. Shepard, '79, Boston, Mass.; vice-president, Charles E. Perkins, '90, Brockton, Mass.; secretary, Waldo E. Boardman, '86, Boston, Mass.; treasurer, E. Proctor Holmes, '88, Boston, Mass. Executive committee: Waldo E. Boardman, '86, chairman ex-officio, Boston, Mass.; William P. Cooke, '81, Boston, Mass.; Ned A. Stanley, '84, New Bedford, Mass. The council is composed of the above named officers.

WALDO E. BOARDMAN,
Secretary.

THE GEORGIA STATE DENTAL SOCIETY.

The thirty-fourth annual session of the above society adjourned after a very successful meeting, at Macon, Ga. The following officers were elected: President, J. M. Mason, D. D. S., Macon; 1st vice-president, S. D. Rambo, D. D. S., Marietta; 2d vice-president, J. M. Whitehead, D. D. S., Vienna; treasurer, H. A. Lowrence, D. D. S., Athens; recording secretary, S. H. McKee, D. D. S., Americus; corresponding secretary, O. H. McDonald, D. D. S., Atlanta. Executive committee: Chairman, G. S. Tigner, D. D. S., Atlanta; G. T. Gurr, D. D. S., Waverly Hall; C. Z. McArthur, D. D. S., Fort Valley; C. Whittington, D. D. S., Valdosta; M. N. Mixon, D. D. S., Rome. Journal editor, W. H. Weaver, D. D. S., LaGrange.

FROM THE PHILIPPINES.

Who shall dare to say after this that affairs in the Philippines are not promising? The following from Dr. Oliver of the Army Dental Examining Board speaks for itself:

"Robert Chaffee Oliver, born May 1, 1902. Dr. and Mrs. Robert Todd Oliver, Manilla, P. I."

Long may Robert Chaffee live to do honor to his illustrious father and his charming mother. (It might seem a trifle bold for a married man to thus publicly call the wife of another man "charming," but then, editors are privileged, you know, and, anyhow, Manilla is a long way off, and above all things, Mrs. Oliver *is* charming, so let the truth be told if the heavens fall and the editor's head comes off.)

THE COLORADO STATE DENTAL ASSOCIATION.

At the sixteenth annual meeting of the Colorado State Dental Association, held in the Alta Vista Hotel, Colorado Springs, June 17, 18 and 19, the following officers were elected for the ensuing year: President, H. B. Hayden, Colorado Springs; vice-president, E. W. Warley, Pueblo; secretary, W. A. Brierley, Denver; treasurer, Wm. Smedley, Denver. The candidates elected for appointment by the governor on the State Board of Dental Examiners were: W. H. Hall, Denver; H. F. Hoffman, Denver; M. H. Smith, Denver; Theodore Ashley, Cannon City; Geo. R. Warner, Grand Junction.

The next meeting will be held in Pueblo, June 16, 17 and 18, 1903.

W. A. BRIERLEY,
70 Barth Block, Denver, Colo. *Secretary.*

RECENT PATENTS OF INTEREST TO DENTISTS.

- 700,855. Casting dental plates, Willard Streetman, Cleburne, Tex.
 701,799. Dental matrix, Wm. Crenshaw, Atlanta, Ga.
 701,616. Dental tool for slitting cap-crowns, Clayton J. Reynolds, Pittsburgh, Pa.
 701,627. Switch for electromotors for driving dental apparatus, Emil Schreier and H. Dumler, Vienna, Austria-Hungary.
 702,276. Closing and locking device for dental flasks, Daniel A. Baker, Schenectady, N. Y.
 701,893. Top for tooth powder bottles, or cans, or other containers, Henry B. Kent, New Brunswick, N. J.
 702,111. Artificial tooth crown, Joseph C. Osborne, Lawndale, N. C.
 702,073. Support and switch for electric dental instruments, Ernest O. Pieper, San Jose, Cal.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

MISSOURI STATE DENTAL ASSOCIATION.

At the last annual meeting of this association, held at Jefferson City, May 21, 22, 23, 1902, the following officers and committees were elected: President, S. C. A. Rubey, Clinton; first vice-president, J. H. Kennerly, St. Louis; second vice-president, F. W. Franklin, Kansas City; corresponding secretary, Otto J. Fruth, St. Louis; recording secretary, H. H. Sullivan, Kansas City; treasurer, J. T. Fry, Moberly. Board of Censors: A. M. McGee, Louisiana; R. J. Winne, Bolivar; W. M. Bartlett, St. Louis. Committee on Ethics: A. J. Prosser, St. Louis; W. H. Renoe, Fulton; J. B. McBride, Springfield. Publication Committee: Wm. Conrad, St. Louis; W. G. Goodrich, Chillicothe. Committee on History: Burton Lee Thorpe, St. Louis. Committee on Inventions and New Appliances: Sam T. Bassett, St. Louis. Committee on International Dental Congress During Louisiana Purchase Exposition: Wm. Conrad, F. F. Fletcher, M. C. Marshall, Hermann Prinz, Burton Lee Thorpe, W. M. Bartlett, Leo Gregory McKellops.

Next annual meeting to be held at Kansas City, Mo.

Respectfully,

OTTO J. FRUTH,

Corresponding Secretary.

ANOTHER DEATH FROM NITROUS OXIDE GAS.

"Mystery, so impenetrable that the police fear they will not be able to solve it before the day set for the burial of the body, completely surrounds the identity of the woman who succumbed to gas Wednesday morning in a dental chair of the Union Dental College, 289 Wabash Avenue.

"The verdict of the inquest held Thursday was that the woman died from asphyxiation.

"Dr. Ross was exonerated from all blame by the coroner's jury. He informed the jurors that he had treated the woman just as he had treated others; that he had administered no more gas than was necessary." (*Chicago American*, June 7, 1902.)

That the dental profession will approve the verdict of the coroner's jury having the case in charge, so far as criminal design or carelessness on the part of Dr. Ross is concerned, goes without saying. All will regret the death, none more sincerely than Dr. Ross himself.

But, is there no reprehension, because a great profession approves, and an operator regrets? Is there no lesson to be gleaned by operator and profession? Are members of society, patrons of dentists to be invited thus to a seat in a dental chair and perhaps death therein and no "stone" no "finger-post" as a guide planted? Let us "reason together."

A trivial operation was to be performed; but though simple without an anesthetic not always free from danger to life; owing to nervous "shock." Such shock, however, is so rare as to be practically ignored.

A "death was caused by nitrous oxide gas causing asphyxiation." So said a jury, guided by a competent, accredited surgeon after he had made an autopsy, and testified.

What is death by asphyxiation? Dunglison says "Owing to supply of air being cut off * * * death occurs from this cause and from want of arterial blood." (Dunglison's Medical Dictionary twenty-first ed. p. 109.)

No one will dispute me when I say that prolonged asphyxiation commonly causes a fatality; profound asphyxia is not free from danger.

Happily, brief asphyxiation is generally followed by resuscitation. That it is not invariably thus is only too painfully evidenced by the sad event.

Where then is the responsibility? On the name Dr. Ross? On the dental profession whose members almost as a unit tolerate if they do not advocate nitrous oxide gas anesthesia? Can the medical profession claim immunity from responsibility?

I answer, *all* are concerned, for, primarily, all are seeking that nice balancing of the weight of danger between shock of operations without anesthetics and peril of the anesthesia. All seek pain avoidance. Humanity demands it.

Scientists are handicapped with finite mentalities; and with agents so potent as are ether, chloroform and gaseous oxide of nitrogen mistakes can alone be avoided by omniscience.

Shall gas be discarded because of this death? As logically banish opium, nuxvomica or rhus toxicodendron from the physicians' case because deaths have followed their inhibition.

Secondarily physicians and dentists as professionals are responsible, and in a measure censurable, because they recognize these anesthetics named, as officinal, and necessary, but underrate the need of teaching *dosage* and administration. How many chairs of anesthesia can be found in medical colleges? How many in dental colleges? I know of none in the former and but two in the latter.

In earlier times it was universally taught that when gas was given, atmospheric air should be excluded. Later that teaching has been challenged and teachers urge that sufficient air should always be given to prevent asphyxiation, and that such mingling air and gas would always eliminate that danger; urging in proof that thousands upon thousands of such administrations have been made without a single death resulting.

Have the professions given sufficient heed to the later teaching? Have they investigated the offered proof to test its conclusiveness? If not, and if in this case, Dr. Ross followed the *major* teachings (as he did) then it illy becomes any one to speak aught but the kindest words of sympathy to or of him, and a plain duty lies before all to learn, and disseminate the truth.

Chicago, June 7, 1902.

A. C. HEWETT.

A NEW DENTAL JOURNAL.

The *American Dental Journal*, published by Frink and Young, Chicago, Ill., and edited by Dr. J. B. Dicus, is just out, and we beg to acknowledge the courtesy of having a copy laid on our table just as we go to press. We bid the new aspirant a cordial welcome to the ranks of dental journalism, and hope it may prove long lived and useful.

OBITUARY.

DR. C. P. CRANDALL.

Dr. C. P. Crandall, for thirty-five years in practice in Brooklyn, was a remarkable and unique man; his deft and skillful touch was such as few can claim. Difficulties were his charm, and patience amidst them was untiring.

His clientele was as unique as his ability, and to a large degree they gave him full proof by generous compensation in fees. His operations of long standing will prove an inspiration to those who witness the mouths of his former patients.

For the last ten years he has practiced in the newly built part of New York City, west end, and Riverside, on the Hudson. The "Murrays" of "Murray Hill" have for many years been his most appreciative patients. Dr. Crandall was for some time the very popular secretary of the Brooklyn Dental Society, now extinct. The doctor was the recipient of a valued testimonial from this society.

One of his expressions was, that a "highly evolved man was an expensive animal." This was largely true of him, for he was such.

Many of Dr. Crandall's friends will much regret his seemingly premature demise at fifty years of age.

G. ALDEN MILLS.

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No. 8

ORIGINAL COMMUNICATIONS.

COCAINE AND ITS MANY USES IN DENTISTRY.*

BY ELLIOTT R. CARPENTER, D. D. S., CHICAGO.

Mr. President and Gentlemen: It is with a great deal of reluctance I present this subject for your esteemed consideration and discussion to-night, as so much has already been said and written on cocaine, but my own observations and practical use of this drug in every-day practice have proven so satisfactory that I cannot refrain from taking the subject up with you this evening, in the hope that some of its uses will prove worthy of your attention.

Cocaine, the crystalline alkaloid, is obtained from the dried leaves of the erythroxylon coca, and was first produced by Niemann, in 1846. It is at once the newest, most active, fatal and powerfully fascinating of all known narcotics.

The cocaine of commerce to-day is known as cocaine hydrochlorate, and I prefer that of Merck, as I find it always chemically pure and reliable in its reaction. It is prismatic in form, is colorless, transparent and odorless, and has a decidedly bitter taste. It is soluble in water and alcohol, but more freely so in ether, and is a powerful anesthetic.

Medically, cocaine has been used as an antidote to counteract the habitual use of morphine, but as in the majority of cases the patients so treated have become cocaine fiends, the cure was considered worse than the disease, and the medical profession have practically abandoned its use in this direction. It is now used principally by surgeons in performing minor operations, and rhinologists in the throat and nasal cavities, the latter specialist using it largely in the form of a spray in from two to twenty per cent solutions.

*Read before the Odontological Society of Chicago.

Pathologically, cocaine produces a convulsive respiratory paralysis caused by tetanus of the large respiratory muscles, and great acceleration of the pulse rate is occasioned by paralysis of the vagus.

The action of the poison is chiefly on the central nervous system, first stimulating, and afterward paralyzing, the peripheral blood vessels becoming contracted. In many cases the primary stimulating effect is very marked, but in the greater number the early symptoms are those of collapse and threatened death. There may be a short period of restlessness, and slight cerebral disturbance; the pulse hard and rapid; the action of the heart labored, and the respiration hurried, with a sense of tightness and constriction of the chest. These symptoms are more or less quickly replaced by muscular weakness, pallor, great perspiration, feeble heart and respiration, vertigo, dilated pupils, and ultimately loss of consciousness, convulsions and collapse, accompanied by a rise of vital temperature. The onset of these symptoms may be almost immediate, or may be delayed perhaps an hour.

Treatment in mild cases consists in laying the patient flat on the back and administering such stimulants as coffee or alcohol, and at the same time applying heat to the extremities.

When there is failure of respiration and threatened asphyxia, artificial respiration must be enforced.

From all I have found written on the subject of its toxic effect, I gather that the most dangerous use of cocaine is to inject it into deep-seated cavities, such as the bladder, sinuses or abscesses.

Originally, cocaine was introduced into the system through the medium of the hypodermic needle, but owing to the great danger attendant upon this procedure, and the utter uncertainty as to its pathological action, the hypodermic is not nearly so often employed as in former years, and, I think, in dentistry is now comparatively seldom used.

About six years ago Dr. C. Gurnee Fellows, the rhinologist of this city, called my attention to the powdered crystals of hydrochlorate of cocaine as a quick and safe anesthetic for operations upon the mucous membrane, and I first used it in excising the flap of gum overgrowing the distal half of the crown of a lower third molar, removing same with but little pain to my patient.

It then occurred to me that it might be a good thing to use upon the gum tissue where it was necessary to crowd the gum away in applying clamps to buccal and labial gingival cavities, but

I did not meet with a great degree of success, and it was several weeks before I discovered the cause of my failure, the reason being that I had not anesthetized the pericementum. Now I pack my powdered crystals of cocaine under the free margin of the gum against the pericementum at points where both jaws of the clamp grasp the root, and in a minute to a minute and a half I can press the gum away from the margin of the cavity, and force the clamp to place with but little or almost no pain to the patient. In this procedure I will add that the rubber dam is applied first, and the hole of the rubber dam encircling the tooth to be thus anesthetized is drawn to one side by the forefinger, enlarging it just enough to expose the edge of the gum, when cocaine can be readily packed between gum and pericementum without the danger of getting it into the mouth and having the saliva carry it to the tongue and throat. Should the cavity be so far beneath the gum as to preclude the possibility of forcing the gum out of the way, I unhesitatingly clamp well on to the gum itself, and dissect away the exposed flap with a sharp spoon excavator, dipping same into a 95 per cent solution of carbolic acid before using. The acid sears over the edge of wound, thus inhibiting the action of microorganisms upon the freshly cut surfaces after the clamp has been removed. Furthermore, I am convinced after six years of close observation in daily practice that in thus cocainizing the peridental membrane the effect of the anesthesia is, to a considerable degree, carried to the pulp of the tooth. Since I have taken special precaution to anesthetize the peridental membrane, I observe that in fully nine-tenths of such cavities I can excavate with much less pain than ever before, and in many cases without pain at all. Thus you have the results of my clinical experience.

I am not a good theorist, but I have sought hard for the truth, and believe after an earnest study of Professor Black's "Peridental Membrane," especially Chapter IX, touching upon the blood supply of the peridental membrane, that I have a possible solution of cause and effect. Professor Black says: "The large arteries enter the alveolus mostly at the apical space, or, rather, one or two vessels enter here, and immediately break up into smaller ones. One or two of these enter the root canal to supply the pulp of the tooth, while others, four, six or eight, pass down the sides of the root to supply the peridental membrane. In their passage down the membrane these divide into many branches; some vessels, however, are continuous from the apical space to the gingivus."

I believe firmly that this anesthesia is carried to the pulp through the medium of the few blood vessels in the membrane that are continuous from the apical space to the gingivus.

Pulp extirpation under cocaine is one of the best demonstrations of what a boon this drug is to the dental profession, and inasmuch as this special operation was so well described by Dr. R. C. Young, of Anniston, Alabama, in an article published in the January *Cosmos*, of 1900, I will not go into a detailed description of it here. The only point in which I would differ with Dr. Young is that he moistens a piece of punk and dips same into cocaine crystals, and I make a saturated solution from the ground crystals, in which I soak a few shreds of cotton, and apply to the exposure before placing the soft rubber over for the pumping process, thereby avoiding irritation to the pulp from small particles of the crystals that are not always dissolved by the water. In freshly exposed pulps a minute to a minute and a half is sufficient time to produce complete anesthesia, when the exposure can be enlarged and the pulp extirpated. I have had good success with the saturated solution of cocaine applied to inflamed pulps, except where the inflammation was of long-standing, and had become chronic. Arsenic would here be contraindicated, so the poor old drug that has served us faithfully for so many years will, I believe, ultimately be relegated with the turnkey to oblivion. Aside from the matter of saving time and pain, teeth having pulps extirpated under cocaine retain their normal color to a much greater degree than where arsenic is employed for the same operation.

The saturated solution of cocaine has now become a daily necessity in my practice, as I use it always in fitting bands for crowns, adjusting separators, inserting wedges, ligating the rubber dam (when this procedure is unavoidable), and in excising hypertrophied gum tissue.

REPORT ON NEW DENTAL APPLIANCES.*

BY J. E. KEEFE, D. D. S., CHICAGO, ILL.

Your committee, mindful of the fact that another paper will be presented to you this evening, has endeavored to make the description of the various appliances as condensed as possible, and will only call attention to the important improvements that would not be

*Read before the Chicago Dental Society.

readily recognized or appreciated by an inspection, such as these appliances will receive to-night.

We have written to seventy-three patentees,* including the different dental supply houses, and have for your inspection twenty-seven instruments and appliances, sent from different parts of the country.

Only a few of these instruments were received before yesterday, and your committee has not had an opportunity to try them, therefore criticism will be reserved.

No. 1, Converse Angular Beaked Forceps, invented by Dr. G. L. Bennett, of Chicago. This forceps is constructed with converse angular beaks, so that their diversified lines of contact on opposite sides of the tooth surface, will lessen the dangers of fracture and slipping. They are made in ten different forms. The peculiar construction of these beaks will be best understood when you inspect the instruments. Your committee has not put them to a practical test, although they have been in our possession for several days.

No. 2, a Dental Forceps invented and sent by Dr. A. H. Jacobs, of Larned, Kan. This forceps is designed for the extraction of single rooted teeth. The liability of fracturing frail teeth while extracting has been materially lessened, owing to the automatic action of the beak. The outer beak, as you will notice, on examining this instrument, parallels the entire surface of the tooth below the incising edge. The doctor makes an apology for the instrument, it not being as perfectly adjusted as he would like to have it. It is one of the first samples he had made. When inspecting this forceps if you will try it on a lead pencil or the tooth we pass around with it you will notice the automatic beak will slide upward when pressing on the handles of the forceps and at the same time adjust itself to the tooth or pencil.

No. 3, a Lower Impression Cup, invented by Dr. Fowling, of Albia, Iowa. This cup is designed to be used for taking impressions with modeling compound. Its movable slides at the inner end of the cup which extend below the tongue can be locked in any position so as to hold the modeling compound closely to the alveolar ridge.

No. 4, a Universal Separator, invented by Dr. W. J. Worsley, of Tinley Park, Ill. In designing this instrument the inventor aimed to embody all the good qualities of other separators on the market. It is composed of eight parts which are adjustable and a

full description would be impossible. The distinct feature of this separator is the manner of connecting the parts of the sectional bows. It can be adjusted to any width desired, which enables the operator to put it over teeth of great irregularity. This instrument can best be appreciated by inspection.

No. 5, Automatic Articulator, invented by Dr. W. M. Bruce, of Toronto, Can. The construction of this articulator will be improved upon, as it is only a sample. It is constructed upon the Bonwill principle and it swings on a sliding pivot from the medium lines from condyle to condyle, has a wide range of movements, and the spiral spring adjustment of the set screw in the center, which relieves the jar when the models occlude is commendable. It is one of the chief features claimed for it.

No. 6, Mandrel and Corundum Disk, invented by Dr. G. M. Williams, of Marysville, Ky. The object of this mandrel and disk is to simplify polishing fissure fillings in molar and bicuspid teeth. It is made from the shank of a bur with the slot cut in the center, in which a polishing strip may be placed and wound a few times, making a very desirable point for polishing.

No. 7, Dental Bur, invented by Dr. Louis Mailliard, of Galt, Canada. The blades of this bur are arranged irregularly with alternate similarity. The blades of the alternate edges are serrated in such a manner as to prevent clogging, permitting a more rapid penetration into the tooth substance.

No. 8, Improvement of the Ivory Adjustable Clamp, by J. W. Ivory, of Philadelphia, Pa. The improvement in this clamp of a labial jaw which is forced by a screw pressure carrying the gum tissue beyond and exposing the cavity.

No. 9, System of Making Seamless, Contoured, Gold Crowns, invented by Dr. W. N. Sharp, and sent by Johnson & Lund. The draw press for making caps is the first of its kind seen by your committee. The punches are arranged in circular form in the press, numbering from 1 to 13, and just beneath the punches is the punch plate. It has holes corresponding in size and numbers to the punches. The punches and the plate can be revolved and held secure in any position by a set-screw on the side of the press.

No. 10, Soft Rubber Tooth Forms, manufactured by Dr. W. N. Sharp. There are seventy-two of these forms in the case and accompanying them is a descriptive table giving the measurements of the necks of the teeth, also the diameter of the disk, and

number of punch to be used to get the exact size of the tooth selected.

The process of making model and crowns is printed on the cover of the box for the benefit of any one wishing to further investigate this method.

No. 11, Rubber Bib, made by Bassett & Co., Marshall Field Building, Chicago. This bib is cut in circular form from a piece of rubber dam, it is so arranged that it will fit any size of neck, and is intended to be used in connection with a cloth bib. It prevents the saliva from destroying the patient's collar or neck wear. It has been in use for a short time and will be appreciated by both dentist and patient.

No. 12, Rubber Tube, also made by Bassett & Co., Chicago. This tube is made from rubber dam and can be easily adjusted over any of the anterior or bicuspid teeth, when it is necessary to protect them from thermal changes on account of extreme sensitiveness. The rubber is so thin that it will slip between the teeth easily and does not cause soreness of the adjoining teeth from pressure.

The following are presented by the S. S. White Dental Mfg. Co.:

No. 13, Gold Pulp Canal Cleansers and Bristles. These instruments are like the well-known Donaldson cleansers and bristles except that the material they are composed of is 18k. spring gold. The cleansers are barbed and the bristles plain only (without hook). They are tough, springy and will follow the canal readily, little likely to break, will not corrode and can be sterilized without risk of rust.

No. 14, Calcar. A substitute for molding sand; is free from odor, does not become lumpy from use, retains requisite moisture by exposure to atmosphere, is clean, copies models exactly and is always ready for use. Put up in two quart cans.

No. 15, Wax Spatula, No. 30. Blades rather narrow, one straight, one curved, spear points, handle of knurled steel, from design of Dr. L. P. Haskell.

No. 16, Wax Spatula, No. 31. A spatula with large working blades for carrying larger quantities of softened wax from the flame to the model than is possible with narrow blades.

No. 17, Poulson's Shaded Pink Rubbers. The manufacturer has endeavored to get over the objection to a monochrome pink for imitating gum tissue, by a combination of different shades of

pink rubbers by which it is claimed a more natural color is obtained; made in two shades, No. 1 light and No. 2 medium.

No. 18, Shaded Crown Rubber. The same method is employed here to obtain an improved base rubber.

No. 19, Shaded Kamerun Rubber. A base rubber in which jet black and various other shades are shown when vulcanized.

No. 20, Universal Gas Stand. This apparatus provides for the use of either 100, 250 or 450 gallon cylinders, the upright carries a hinged adjustable yoke and supports the face piece and gas-bag, making a convenient and compact outfit.

No. 21, Gas Cylinder Yoke Connection. An improved reinforced yoke, making a safe, tight connection between cylinder and gas-bag, an improved key which operates both yoke connection and gas cylinder valve.

No. 22, Three Cylinder Gas Apparatus. This apparatus is supplied with a base fitted for three cylinders and is attached to the outfit for combining nitrous oxide gas with oxygen. This arrangement obviates the possibility of running short of nitrous oxide during an operation.

No. 23, Knapp's Detachable Band Stud. An additional regulating device, enabling the operator to use any tooth band and to attach the usual regulating appliances at any point where the band can be perforated.

No. 24, Knapp's Head Cap. Made of kangaroo skin and silk cord, is light, cool and adjustable, fitted with metal buttons for the attachment of rubber bands with the protrusion bow.

No. 25, Water Syringe No. 36. The pipe in this syringe is curved and fitted with a metal plate and fills the bulb automatically when hung over the edge of a glass filled with water—held in the hollow of the left hand when grinding teeth, the thumb and forefinger can be used for keeping the patient's mouth open, the syringe responding to the slightest pressure of the bulb.

No. 26, Gritman's Band and Crown Drivers. A set of four cone-socket instruments. No. 1, to hold a wooden point for fitting bands or setting hollow metal crowns; No. 2, for fitting bands for Richmond crowns on anterior teeth; No. 3, of bayonet shape for fitting bands to posterior teeth; No. 4, a bayonet-shaped driver $\frac{3}{16}$ inch wide to enable the operator to reach any point of the band he wishes to drive into position.

No. 27, Diamond Burs. A set of sixteen instruments with soft

steel heads with which fine diamond dust has been incorporated. If run rapidly and the points kept well moistened, they will be found very desirable in giving a smooth edge when finishing up cavities.

No. 28, Card System of Account Keeping. The outfit consists of three sets of guide cards, each set having a distinct color—300 white record cards and a pad of examination blanks enclosed in a japanned tin or oak case. This method facilitates the rendering of bills, all paid and closed accounts being eliminated, and does entirely away with books.

No. 29, Tweezers for Porcelain. Spring tempered tweezers, with a sliding lock pin in a slot for handling inlays or crowns, or for holding bands.

No. 30, Contra-Angle Hand Pieces. The improved feature in these hand pieces is the bend or elbow in the handle which disposes the angular head to one side of the axis of the hand piece. This permits the head of bur when placed in position to be approximately in line with the axis of the hand piece. This construction avoids any tendency of the hand piece to turn in the hand or rock laterally when cutting out buccal or lingual grooves of cavities.

TREATMENT FOR THE CURE OF DISEASE OF THE ANTRUM AND OF ALVEOLAR ABSCESS WHICH IS NOT ACCESSIBLE THROUGH THE ROOT CANALS.*

BY H. A. CROSS, D. D. S., CHICAGO, ILL.

In the preparation of my paper I have been guided by the experiences of practice in my own office.

Notwithstanding this fact, it is well known to you all that these diseases were successfully treated long before I entered the dental profession, so that I do not lay claim to the general idea of treatment as set forth in my paper, but there is originality in it, which will be found in the details of the treatment recommended.

Investigation of the methods of practice among the rank and file of the dental profession at large will convince any one interested in the subject that there is something radically wrong in the way in which alveolar abscess is being dealt with by the average dentist. It is a lamentable fact that a very large percentage of those cases

*Read before the Chicago Dental Society.

of alveolar abscess which do not readily respond to treatment through the root canals, and that other class of alveolar abscess which is not accessible through the root canals is made the occasion for extracting very valuable teeth which might easily be saved for lifelong usefulness to the patient.

The well-nigh universal custom of extracting teeth, and good roots, as a cure for this disease by a large majority of those constituting the dental profession is surprising.

There are many dentists who use no other instrument than the forceps when a case of this nature is presented to them for treatment. Ample instruction is given in the reputable dental colleges for dealing with all classes and conditions of alveolar abscess and disease of the antrum, so that graduates are without excuse who find themselves unprepared to cure these diseases, as a rule, without extracting the teeth, especially in the treatment of alveolar abscess of this class. It is to be hoped that some means may be found to reach those dentists who make such frequent use of the forceps in cases of this kind, and that the great sacrifice of useful teeth may be checked. The comparative ease with which these diseases may be cured without sacrificing the teeth renders the use of the forceps inexcusable. More papers should be read and more discussions held on this subject, in the many dental societies throughout the civilized world. A radical change in this direction should be brought about.

It would be interesting to know what percentage of the dentists of the United States would know what to do, and how to accomplish it, and would put their knowledge into execution when a case of alveolar abscess, which is not amenable to treatment and cure through the root canals, is presented to them.

Among the class who would unhesitatingly proceed to operate upon the abscess without extracting the tooth, we would doubtless find considerable variation in the methods employed, to which it may be said that any method that is successful without extracting the teeth is commendable.

Let us first briefly consider a method of treatment of alveolar abscess which, for any reason, cannot be approached or successfully treated through the root canals

We sometimes find the canals inaccessible by reason of having been, at least, partially filled with amalgam, or cement, or wooden points. Be the cause what it may, which renders it impractical to

attempt the treatment of the abscess through the root canals, a surgical operation is indicated.

The patient should be anesthetized. General rather than local anesthesia is usually preferable for a case of this nature. However, local anesthesia may be employed in some instances, while in certain cases the operation may be performed without using an anesthetic of any kind. This depends largely upon the ability, or the willingness of the patient to endure pain. Some cases are comparatively simple, and require but little, if any, anesthetic, while others are of such serious nature that general anesthesia is desirable. Even in such cases it is not always necessary to produce profound anesthesia. The degree of anesthesia to be produced in any given instance will depend upon the nature of the case.

When general anesthesia is desired, nitrous oxide gas may be employed, though chloroform is preferable.

When using the gas, if the patient recovers from its effects before the operation is completed, it causes an interruption in the operation which could not be resumed until it would be considered safe to administer the gas again, which is a great objection. One reason why chloroform is preferable is that many operations of minor surgery can be comfortably performed with but partial anesthesia, and a little additional chloroform may be administered by the assistant during the operation if necessary. The condition of the patient under the influence of chloroform as compared with that of gas is much more satisfactory, the patient being quieter and calmer, which is a great advantage to the operator.

The dentist should be master of the situation and competent to administer the anesthetic himself with the aid of his assistant, without calling in a physician.

A V cut through the gum should be made, or a cut in the form of a half circle, over the region occupied by the abscess. Then with a new bur in the dental engine proceed to cut out very thoroughly all the necrosed bone, it being necessary often to use different burs in this part of the operation. The success of the operation depends largely upon the thoroughness in the removal of the diseased bone. It is better to cut a little beyond the point limiting the extent of the diseased bone, for by cutting deep enough to remove a little healthy bony tissue you will create a condition that will more readily respond to nature's effort to heal the wound thus made.

Instruct your assistant to administer a little more chloroform

while you are operating if occasion seems to require it. After the cutting out of the diseased bone has been accomplished, the patient should be allowed to revive and assume a sitting posture before syringing out.

The next step is also of the utmost importance, that of syringing out the pocket made by the cutting, and the selection of the best solution obtainable for this purpose, which should contain an excess of oxygen. The preparation known as hydrozone is the very best, on account of its greater strength, and it should be used full strength, freely and abundantly. The point, or beak, of the syringe containing hydrozone, should be thrust into the deepest recesses, and the piston of the syringe pressed very slowly to give ample time for the action of the hydrozone. This should be repeated until the effervescence boiling out becomes white as snow, which indicates that the septic matter accessible to the hydrozone has been eliminated. Then wash out the pocket with distilled water, using the syringe as before. The opening, or pocket, thus made in the alveolar process should be packed with a pellet of absorbent cotton of sufficient size to comfortably fill the pocket made, for the purpose of drainage.

Then dismiss the patient, after having made an appointment for the following day. At the next appointment remove the cotton and syringe out thoroughly again with hydrozone, following that with distilled water as before. On this and subsequent occasions the last thing to be done before placing the absorbent cotton in the pocket, is the application of boracic acid, either in the form of powder, or a saturated solution. To facilitate the removal of the cotton at the next sitting, it may be slightly lubricated upon the outer surface before inserting it.

The number and frequency of treatments necessary after the second treatment depends upon the case in hand. All subsequent treatments, however, should be the same as the second treatment, except in the matter of the size of the pellets of cotton used for drainage. These should be made smaller at each successive treatment to allow space for new granulations in the wound.

The time required for the cure of alveolar abscess, when operated upon, and treated in the manner above described, is from five days to two weeks as a rule, but you will please bear in mind that when the word "cure" is used in this connection it is to be understood as having reference to the time when no more treatments are

necessary. Those who may be skeptical regarding this matter of naming a time limit in the cure of an alveolar abscess, will remember that when an alveolar abscess, even though chronic in its nature, has been converted into a healthy wound by surgical operation and other treatment as described above, the battle has been practically won. Nature will be found to do her part, and will act quickly as a rule, but of course there are exceptions.

In taking up the other branch of the subject under consideration, namely, treatment for the cure of disease of the antrum, it will be stated in the outset that only those cases will be considered which are caused by a dead pulp in some neighboring tooth, and also that it is not always necessary to extract the tooth, or root which caused the disease in the antrum. In some cases the root may be saved and crowned, and the diseased antrum cured. The first step is to anesthetize the patient. Then make the incision in the gum rather high up, and opposite, or a little to one side of the root which caused the trouble. Then with a bur in the dental engine cut away all the diseased bone around the apical end of the root, and wherever any diseased bone may be found, extending the cutting up through the floor of the antrum. Then enlarge the opening thus made into the antrum by using an Allport bur, which is larger and longer than an ordinary bur. The size of the opening to be thus made into the antrum will naturally vary somewhat, according to the nature of the case, but the opening should be large enough to afford ready access to the antrum with the syringe, and to afford good drainage. Then allow the patient to revive and sit in an upright or slightly reclining position before using the syringe.

Hydrozone should be employed as in the case of treatment of an alveolar abscess, using it full strength in those parts surrounding the root. No harm will take place if a little should find its way or be forced into the antrum, though a weaker solution should be used for injecting into the antrum.

Hydrozone one part and distilled water three parts would be safe to use first for syringing out the antrum. If a clear passage from the antrum into the nares is indicated by a free escape of the effervesced hydrozone out through the nares, it would be safe and advisable to use a stronger solution of the hydrozone for washing out the antrum, though a twenty-five per cent solution will do good service.

We will make the statement, which, to some, may seem immoderate, that hydrozone full strength may, in some cases, be injected into the diseased antrum by an experienced operator, though this is not necessary, nor advisable as a rule, but I wish to emphasize the need of great thoroughness in the syringing out of the antrum with the peroxide of hydrogen solution, for this is the chief factor of our success in curing a diseased antrum in the shortest time possible. This wash should be injected into the antrum five or six times or more, at each treatment, or until the effervescence escaping exhibits that whiteness which indicates purity and cleanliness.

Then syringe out with distilled water. Then flush the antrum with a two per cent or three per cent aqueous solution of carbolic acid.

We are now ready to insert that which is to serve the purpose of drainage, not only for the antrum, but for those other tissues between the floor of the antrum and the surface of the gum.

Your attention is here called to something new in that line. Take ordinary white cotton wrapping twine and sterilize it well by boiling. Then double it so that you will have four strands, more or less, according to the size of the opening made into the antrum, the strands lying side by side in the form of an untwisted rope. Tie a single knot in one end of this rope, and gently pass it through the opening into the antrum, so that the knot will just pass through the floor of the antrum. Then cut off the ends hanging out through the gum, leaving them about half an inch long.

Repeat this treatment of syringing out and flushing the antrum daily for a few days, then two or three times during the following week, inserting a twine rope drainage at every treatment.

The frequency of subsequent treatments, and the length of time necessary to continue these treatments, will depend upon the case in hand, but it is an established fact that some cases of diseased antrum may be cured within thirty days. The term "cured" is used in the same sense as applied with reference to alveolar abscess, meaning when no more treatments are necessary.

In the treatments of the antrum, after the first few sittings, a saturated solution of boracic acid should be added to the solution of carbolic acid, or it may be injected into the antrum separately.

Campho-phenique in a diluted form may also be used to advantage in the treatments for the cure of disease of the antrum.

In conclusion, emphasis is placed upon the statements made

with reference to hydrozone being used freely and abundantly as a curative agent in the treatment of alveolar abscess and disease of the antrum.

CARE OF CHILDREN'S TEETH.*

By A. H. PECK, M. D., D. D. S., CHICAGO, ILL.

The proper care of children's teeth, not only the permanent teeth of young children, but especially the deciduous teeth, is a question of more importance than many dentists are in the habit of ascribing to it. The main purpose of the deciduous teeth is the mastication of food—whatever hard food the child is to take—until they are replaced with the permanent set, and the first of the temporary teeth are not replaced with the permanent ones until the child is five or six years of age, the lower incisors usually being the first. For esthetic reasons, it is necessary that the anterior teeth be preserved, if possible, until it is time for the permanent ones to replace them. It is doubly important that the molar teeth of the deciduous set be preserved until the permanent ones are ready to take their places, not only important that the child may be able to properly masticate his food, but also to prevent irregularities in the eruption of the permanent teeth. This also applies with equal force to the anterior teeth. For, if a temporary tooth is extracted or lost before it should be, or before the permanent one has developed and is ready to take its place, the substance of the jaw is relatively soft, not being thoroughly calcified, perhaps, throughout a portion of its structure, and there will invariably be a contraction or other change, thus narrowing or otherwise altering the normal shape of the arch. The space formerly occupied by the temporary tooth is more or less closed, and often to a considerable extent, so that when the permanent tooth erupts there is not proper space in the line of the arch for it; hence, it is crowded out of its normal position and forms an irregularity in the permanent set. This premature extraction of the temporary teeth is a prolific source of irregularities of the permanent ones.

There is one thought in connection with the early extraction of the temporary teeth, however, which must not be overlooked, because the expression is so frequently heard that the "early extraction of the temporary teeth hastens the eruption of the permanent

*Read before the Odontographic Society of Chicago.

teeth." This, in one sense, is true, but in the larger sense it is not true. Unless the permanent teeth have developed to such an extent that they are ready to occupy the place of the temporary teeth, the effect of the extraction of the temporary teeth will be just the opposite to that of hastening the eruption of the permanent ones. It will cause a delay in the eruption of the permanent teeth, for if the roots of the deciduous teeth are not resorbed, their sockets will be filled in with bone tissue, so that it is necessary in the future that this bone structure be resorbed through the pressure of the oncoming permanent teeth, and whenever this occurs the eruption of the permanent teeth is delayed, rather than hastened, because of the necessity of the resorption of the bone thus formed over them.

It is by no means an easy matter always to successfully treat deciduous teeth. The patients are young, they have not arrived at the age where they are capable of reasoning or understanding the necessity for such work, and simply think, if they think anything, that they are being abused all the time that they are in the dental chair. And, at the same time, a great many children have not had the proper necessary training at home, so that when they come to have their teeth operated upon it makes it all the more difficult to control them or to work in anything like a satisfactory manner, so one has to work under the greatest disadvantages in dealing with these little ones. It is usually best to deal with little children gently, to rarely ever use harsh measures in working for them, or be cross with them. However, this is a difficult matter in all cases, and occasionally the opposite treatment, to a certain extent, results in good, especially where the child is a trifle farther advanced in years, and is capable of reasoning and understanding something of the necessity for the work.

Another point in dealing with them is this: In the majority of cases one will get along a great deal better when their parents, or the mother—who is usually the one to come with them—remains in the waiting room, leaving the child in the operator's care while the work is being done. I have many little children as patients, and there are comparatively few with whom I desire or permit the mother to remain while I am working. The child usually looks to the mother for sympathy, and the instant he is hurt the least bit he turns to her as the "cure-all," and expects her sympathy and interference, and she, in the large majority of cases, as is natural, will at once begin to sympathize with him, which makes matters all

the worse. Whenever these conditions confront me in my office, I invariably request the parent to take a seat in the waiting room, and, if necessary, close the door and deal with the child myself.

ACHING PULPS OF DECIDUOUS TEETH.

In caring for cases in which the cavities have not developed to a sufficient extent to make devitalization necessary, the treatment is practically the same as in connection with permanent teeth; the medicines used and the manner of their use are virtually the same; sedative agents, those which will have a tendency to reduce the irritated condition, should be used, and, if necessary, should be sealed in the cavity for a few days, the decayed structure previously being removed as thoroughly as may be.

The rubber dam should be used in all cases where it can be with safety and satisfaction. But in dealing with very young children I believe it best not to attempt the use of the rubber dam when it can possibly be avoided. The work should be made as easy as possible, and subjection of the child to any undue strain or fatigue should be avoided. One had better use absorbent cotton rolls or bibulous paper, and keep the parts dry in this way.

The method of procedure, and especially the agents to be used for devitalization—when this operation is necessary—are important matters for consideration. In cases where the roots of the teeth are fully developed, where the foraminal openings are normal as to size, and when possible to have the little patient return in a comparatively short time, I seldom hesitate to use arsenic. The pulp chambers and the pulp canals of the roots of deciduous teeth are relatively large as compared with the permanent teeth; the foraminal openings are, in nearly all instances, relatively larger than they are in permanent teeth, so that in dealing with these cases one should satisfy himself that the roots are fully developed before deciding to use arsenic. Then only a small quantity should be used, and it should not, as a rule, be left in contact with the pulp tissue more than three to six hours. Have the patient return the same day, and remove it, and make the next treatment in order. If these precautions are observed, trouble will rarely ever result. Other agents which are used, when it is not advisable to use arsenic, are not very satisfactory. We have no agent other than arsenic that can be sealed in contact with a pulp which acts in a similar positive manner. Devitalization with these other agents is a gradual

process, and is usually accomplished only after frequent applications. Carbolic acid is one of the agents which may be used for the gradual destruction of these pulps. Beechwood creosote is, perhaps, frequently used. Cobalt is another, and of the three is most positive in its action. They have this virtue, however, that if the pulp at first is inclined to ache, they impart a soothing, sedative effect upon the organ, thus tending to reduce the pain.

I have had cases of very young children in whose teeth several pulps were involved. The crowns of some of the teeth decayed or otherwise wasted nearly to the gum line, others with large proximal cavities, exposing the pulps which have become inflamed, causing intense suffering. It is often impossible to successfully treat these cases with ordinary methods. With many of these I have experienced the most gratifying results by calling in the family physician to administer a general anesthetic, and while the little patient is thus unconscious thoroughly removing the pulps and making proper dressings.

ABSCESSSES.

It is not always possible to successfully deal with abscesses in connection with deciduous teeth. If the roots of the teeth are not well resorbed, so that much bone will form over the oncoming permanent teeth, deciduous teeth in connection with which abscesses have developed should not be extracted until all efforts to cure the abscess have failed. If the roots of deciduous teeth are two-thirds or even one-half resorbed, so there will not be much bone formation over the permanent teeth, and not much danger of contraction of the jaw and a consequent irregular condition of the permanent teeth, extraction of the deciduous teeth thus afflicted is, in my judgment, justifiable.

TREATMENT.

The treatment of these abscesses is in no essential different from the treatment of abscesses connected with the permanent teeth. The same remedies, as a rule, are indicated, with the exception that the milder agents should be used in dealing with little children. Such escharotics as carbolic acid should rarely be used, because of the impossibility of being able to control the conditions, and thus confine the remedy to the diseased tract.

The treatment process should be conducted in the same manner, so far as possible, as in connection with the permanent teeth. However, where there are no complications—and there rarely ever are

in connection with abscesses in deciduous teeth—they will yield more readily to treatment than many forms of abscesses connected with the permanent teeth. The cellular structure of the tissue is in an active condition, and the healing process is carried on readily and rapidly, so that one or two thorough treatments through the diseased tract is usually sufficient.

When it is necessary to extract a tooth for a little child, or to perform any brief operation in which much pain will be inflicted, bromide of ethyl—a general anesthetic—may be administered to excellent advantage. The anesthetic influence of this agent is usually manifested a few seconds after the beginning of an inhalation, and lasts from one and a half to three minutes after removal of the drug.

CANAL FILLINGS.

What is best to use in filling the root canals of deciduous teeth is a question of more or less importance. If the teeth are to remain for some years before being replaced by the permanent ones, I never hesitate to fill them with permanent, lasting materials—gutta-percha preferred—in the same manner as I fill canals of permanent teeth. However, a seemingly legitimate objection to this use of such materials as gutta-percha might arise, as the roots of these teeth are to be resorbed; the gutta-percha, which will not be done away with as are these other structures that are natural to the system, might interfere with the normal performance of this function. Or that the gutta-percha might constitute a barrier to the normal eruption of the permanent teeth. My clinical observation and experience is to the contrary. I have seen the crowns of many deciduous teeth, the root canals of which had been previously filled with gutta-percha, the substance of which roots had been resorbed in a perfectly normal manner, the gutta-percha remaining in cone-like projections. In no instance have I observed inflammation or even an irritated condition of the parts resulting from the presence of the gutta-percha. If the roots are well resorbed, or the teeth are not to be retained very long, I believe other materials, such as a creamy paste of iodoform and oil of cloves, or paraffin wax will serve the purpose of canal fillings just as well, if not better.

FILLING MATERIALS FOR CAVITIES.

It is seldom advisable, in my judgment, to use gold for filling cavities in deciduous teeth, except in small cavities, where the

child is able to bear the operation and the parent especially wants it. As a rule, the plastics will serve the purpose well, and can be inserted with comparative ease when, on account of the tender age of the patient, or inability to retain the rubber dam in place, it would be impossible to insert gold. For esthetic reasons cement should be used in the anterior teeth, though it is necessary to renew it comparatively often. In the back teeth, amalgam will serve the purpose better on account of its superior resisting qualities. I have frequently used a mixture of cement and amalgam to excellent advantage. Take about equal parts of amalgam and cement before either has set, and mix them together thoroughly. This mixture has the advantage of the stickiness of the cement, causing it to adhere to the walls of the cavity, and the hardness, to a certain extent, of the amalgam. In cavities suitable to the use of gutta-percha, this material properly inserted constitutes an excellent filling. It is nonirritating, is not dissipated by the fluids of the mouth, and will prevent recurrence of decay when other materials fail. Tin foil properly inserted also constitutes an excellent filling. It wears well, and its preserving properties cannot be gainsaid. This material is only suitable for the back teeth, as it blackens in the mouth, and causes more or less discoloration of the teeth.

FIRST PERMANENT MOLARS.

Many parents look upon the first permanent molars as temporary teeth because they are erupted while the child is comparatively young, and for the reason that they consider them temporary teeth and that they will in the future be replaced by others, they frequently neglect them, permitting them to decay, so they have to be extracted. It should be our constant aim to impress upon the minds of our parent patients that these are permanent teeth, and not only permanent teeth, but are, in the main, the most important of the molar teeth, and should be retained throughout life, and that it is necessary that particular care should be given them. While they are the largest of the molars, and, as stated, the most important to be retained, when they present with their crowns more or less destroyed, just what to do with them, that the best interests of the patient may be conserved, is frequently a perplexing problem. This is a clinical fact, that when it becomes necessary to devitalize and fill the root canals of these teeth while the child is young, even though the operation is successful, the root canal fillings are perfect,

and there is no trouble from that source, they will not remain useful teeth many years. There is something about their development, something about the condition of the bone and all the other parts connected with them, that does not withstand the stress of mastication as well as they do when the patient is older before the pulps are devitalized. Four or five or six years, at the most, may be considered as the extent of time to which these teeth will remain serviceable. So that unless there is some special reason why they should be retained, it is well in a great many instances to extract them, when devitalization becomes necessary. If the crowns of these teeth are wasted anywhere from the time of eruption to twelve years of age, it is undoubtedly best to extract them. If extracted thus early in life, the second permanent molar will nearly always move forward bodily, thus occupying the space formerly occupied by the first molar, very little, if any, tipping of the tooth resulting. Tipping of the second molar occurs when the first molar is extracted later in life, anywhere, we may say, from ten to fifteen years of age. It is also a question, when it is deemed advisable to extract one first molar, whether or not it is well to extract the first permanent molar on the opposite side in the same jaw, though it be a sound tooth. My judgment is that it is best at this period of life to extract both, for the reason that if one only is removed, the teeth of the entire arch will move to the side from which the tooth was removed, and not infrequently they will thus move a distance equal in width to an incisor. Hence, when extraction is to be done, it should be done as early in life as possible, and if both are removed, as a rule, the other molars will move forward and occupy space in the arch in a more or less even and regular manner.

This thought may be worthy of consideration: That it may be well, especially with older children, after having extracted one of the first permanent molars, and it does not seem advisable to extract the other one, to adjust some sort of an appliance—bands to the second molar and second bicuspid—with a bar extending across the space, so as to hold them in their normal positions and retain the normal space in the jaw until the patient is old enough to have bridge work inserted.

It is indeed quite impossible to present a set of rules to be closely followed in dealing with the various diseases that present in connection with children's teeth. One must use judgment and be guided largely by the various conditions that present in the individual cases.

PROCEEDINGS OF SOCIETIES.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held at the Victoria Hotel Tuesday evening, Jan. 21, 1902, with the president, Dr. A. O. Hunt, in the chair.

Dr. Elliott R. Carpenter read a paper entitled "Cocaine, and its Many Uses in Dentistry."

DISCUSSION.

The discussion was opened by DR. GEORGE C. MATHISON, of Winnipeg, Manitoba, who said: I have enjoyed the paper very much indeed, but must confess that I use cocaine in my own practice as little as possible. I did use it, and rather indiscriminately, during the first few years of my practice, but like the majority of dentists I, too, became frightened and abandoned it. I had a case last summer, a lady of fifty, in which I gave a hypodermic of cocaine to extract a lower molar. I used a one per cent solution. Before I got through with her, I thought she was dead. Since then I have not used it hypodermically. I do use it for the extirpation of pulps, and I must say that I find it extremely useful for that purpose. Some time ago I read a statement in some journal that it was not the cocaine that caused the anesthesia, but that it was the pressure of the fluid. This writer maintained that the same results would accrue by using alcohol. I tried it in one case, and found it to be true, but do not know whether it would do in all cases.

DR. F. J. CAPON, of Toronto, Canada: I had a little personal experience with cocaine many years ago. I was then the subject of cystitis, which at times was very painful. One afternoon, being in considerable pain, I injected a five per cent solution of cocaine into the urethra. Before I could get to the bed I fell over unconscious. This was at about 1 o'clock. As I had the hypodermic syringe handy, I tried to inject strychnine and atropine into my arm, but my idiosyncrasy was so pronounced that my muscular strength was gone, and I had the feeling of leaving this earth. My mind was quite clear for a time, but at last I passed off into a stupor. I laid there until 9 o'clock that night, when the door of my room was broken in by the family, who had not missed me until then. It took some hours to bring me to my senses. They sent for a doctor, who, of course, did not know what had occasioned the trouble, but gave me something to revive me. I had nearly all

of the symptoms of poisoning mentioned by Dr. Carpenter. It is said that the best proof of the pudding is in the eating thereof, but I don't want to try again.

I never had a case in my practice, because I never use cocaine indiscriminately. I never use it for extractions, but using it as the essayist has stated, to anesthetize the margin of the gum, I may have gotten relief which I did not know of, by extending the cocaine down the peridental membrane to the main arteries.

In regard to pressure, I saw a few little instruments the other day that were very neat. The trouble in making pressure is to get an instrument that fits a cavity so as to make the pressure directly. This pressure must also be made evenly throughout the cavity, so as not to cause any pain. Some one has designed three instruments for this purpose that have a slight concavity which makes the pressure. They are new to me, but I have seen them demonstrated, and think they are very efficacious.

DR. M. A. MASON, of Fort Wayne, Indiana: I have had very little experience with cocaine, and that has been limited almost exclusively to pressure anesthesia and extraction of teeth. I use it in tablet form, and make a less than one per cent solution. I have never experienced any unfavorable results from it. Several years ago I used it in a little stronger solution on the recommendation of an oculist who offices with me, but never had any unpleasant effects from it.

DR. M. F. CROSS, of Oshawa, Ontario: I occasionally use cocaine on the gum for adjusting the rubber dam and clamp, and with good results. I always use it in tablet form, as it is not only convenient, but accurate.

DR. F. J. PATTERSON, of Mendota, Ill.: I have listened to the paper with a great deal of interest. I practice in a country town and am therefore obliged to do a wide range of service for my patients, and this paper on cocaine appeals to me. I have used it as a local anesthetic for some years but always with the greatest care and with little ill effect. I believe I can add nothing to what has already been said as to its applicability.

DR. G. H. DAMRON, of Arcola, Ill.: I enjoyed the paper very much. I believe that the dentist in the country has entirely different experiences than the city dentist, who is nearly always able to control his patients. Of course, there are dental shops in all cities where the riff-raff go for their work, but to the legitimate

practitioner come the patients who are willing to put themselves under his care, and abide by the consequences. They do not say that they want cocaine used because their neighbor had it used, and experienced no pain from the dental work. We have to contend with that in the country every day. It has been my experience ever since cocaine has been used, although I believe that fifty times will cover all the injections with the hypodermic syringe that I have ever made. I have never used cocaine as described by the author for pressure, but I will certainly try it. Personally, I do not like cocaine, but I might change my mind if I were to investigate it as much as Dr. Carpenter has.

DR. S. H. CHASE, of Madison, Wisconsin: I wish to commend the paper, which has been very interesting and instructive. My experience with cocaine has been rather limited. About three years ago I read a paper by Dr. Wright, of Milwaukee, who recommended cocaine as an agent for the extirpation of the pulp. I have since used it, and with very good success, except in one case. A patient came to my office with an exposed pulp in the lower right first molar. After adjusting the rubber dam, I applied cocaine, the pure crystals dissolved in campho-phenique. I applied pressure for about a minute, when suddenly the patient jumped out of the chair and ran around the room. His excitement subsided, and he quietly resumed his seat. He said he felt as if he was going to faint. I applied more pressure and removed the pulp.

DR. CHARLES C. CHITTENDEN, of Madison, Wis.: I think we all agree that cocaine in dental practice is gradually being relegated to its proper place. The hypodermic syringe is rusty and has been laid away. My experience in the use of cocaine for the extirpation of pulps coincides with that of the essayist in some respects. In many cases of the anterior teeth where the pulp canals are sufficiently large to enable the pulp to be removed without fracture, cocaine is very useful. I have had a somewhat different experience with the use of cocaine for the extirpation of pulps from the molars, especially from the buccal roots of the upper and the anterior roots of the lower molars, where it is frequently impossible to extirpate the pulp whole and not leave particles behind to resuscitate after the operation of filling the root canals has been completed. I have encountered some difficulties which I am convinced can be easily overcome by the use of our common friend and enemy, arsenic. My experience with cocaine in these molars has been such that I

have practically abandoned its use for the attempted extirpation of the pulp from these smaller canals.

I am very pleased with the essayist's paper, and must commend his earnestness and thoroughness in going to the bottom of reasons for things. Thanks are due him for the way in which he has presented the subject to us.

I wish to thank the Odontological Society for the courtesy extended to the Madison Auxiliary, of which I have the honor to be president. The visit with which you honored us nearly two years ago gave our little society an impetus which has borne fruit manifold. In the name of the Madison Auxiliary I wish to extend to this association an invitation to visit us at any time you may choose.

DR. W. H. G. LOGAN: Cocaine is without question the best local anesthetic we have, and also it may be said that it is the most poisonous, therefore it is the most dangerous that we are called upon to use in dentistry. It has been said that we have discarded the local injection and now believe in local applications. It seems to me that the local application about the free margins of the gums of a drug like cocaine is a very dangerous procedure, for it is difficult to control it, and keep it out of the throat. A paralysis of the glottis might ensue, and death follow before we could take measures to resuscitate the patient. Personally, I would prefer to use a one-half per cent solution, and inject it in the old way, unless it is to be used inside of the pulp chamber. There use the strong solution or a saturated solution, because you are outside of the general circulation. When it comes to a local injection or the application about the gum tissue, I would prefer eucaïne B. It is nearly as good a local anesthetic and is a great deal less toxic. I have injected both cocaine and eucaïne B into the gluteal muscles of guinea pigs. The guinea pig injected with five per cent cocaine solution died three minutes afterward. The pig injected with the eucaïne B had at the end of that time no symptom of poisoning nor any spasm. I do not claim that it is as good an anesthetic as cocaine, but I do claim that it has remarkable anesthetic effects, enough for all purposes.

When it comes to a consideration of cocaine to take the place of arsenic—I had one pulp removed in that way, and I will take arsenic from now on rather than cocaine. In molars and bicuspid, I believe that every man, if he wishes to do his duty to himself and to his patient, will before filling the tooth, whether he kills the

pulp or takes it out, use papain, one of the very best things of the many good things Dr. Harlan has given the profession. Those who once use it will never fill another lower molar without it.

I would ask this one question: The statement was made that upon the pressure of the cocaine about the gingival border the solution was carried into the small artery, transmitted to the larger arteries, and then carried into the pulp tissue. Would not the cocaine carried into the small arteries go into the capillaries, pass into the veins, and not backward into the big arteries?

DR. DON M. GALLIE: I have enjoyed the paper very much, but cannot say that I have had the same success with cocaine as he has. I remember when I first started into practice, it was in a section of the city where we had all kinds of night marauders. About three weeks after locating on the corner I was aroused about midnight by a man suffering from an aching tooth. I had a gas apparatus, but was afraid to use it alone, and cocaine was then considered the Moses that was going to lead us out of all kinds of trouble. I injected a two per cent solution to extract a lower third molar. I got it out, but the man started to cut up some capers entirely foreign to me. Fortunately, a physician lived in the same building, and with his assistance and the injection of nitroglycerine and whisky, and promenading him up and down all night, we saved the man's life. Another dentist in our building was using cocaine around the gum margin the other day, injecting four or five drops, and in a few moments the patient collapsed. It took the doctor all morning to keep the man from dying.

Experiences of that kind make me feel a little bit shaky about using cocaine. If we use it successfully in one hundred cases, and it proves disastrous in the next case, it is sufficient reason to discard it and especially for purposes of extracting, or where it is necessary to inject it. No matter how small the per cent may be, the effect on some people is a disastrous one. I use it with some success around gum margins when I want to fit bands.

Cocaine for the removal of pulps is a good thing when we can apply direct pressure, but even there I have found considerable soreness. Some of those who advocate cocaine for the removal of pulps put in a dressing, but I find that it produces greater soreness at the apex or the surrounding parts than follows the use of arsenic, and I have almost discarded it entirely for the purpose of removing pulps in posterior teeth. My experience has been the same as Dr.

Chittenden's. You can get down to one canal, but in the molars I have always had poor success with it. There are always a few ragged shreds left there, and when you begin filling it will make trouble. It will become painful, and the next time the patient comes to you there is considerable soreness. I do use it in anterior teeth quite frequently, but seldom in posterior teeth. When a patient is suffering intensely from toothache, the only thing to do is to remove the pulp and then I think cocaine is indicated, because I can get relief more quickly by using cocaine under pressure than by using arsenic or any soothing preparation. We must be careful, however, in using cocaine especially by injection.

DR. C. N. JOHNSON: I cannot let this paper pass without expressing my appreciation of it. I have a feeling that if cocaine had been always used, as advocated by the essayist, we would not have heard so much of disaster from its use as we have. I have been prejudiced against cocaine almost from the time it was first introduced. We had an experience one day at our State Society, when it first came into use, that was typical of its effects. We had a large number of persons seated in the room awaiting extraction, and the clinician was operating upon patient after patient, getting beautiful results in most cases, and using the same per cent solution. I do not recollect what the percentage of the solution was. He was a very careful operator, and everything was sailing along beautifully until he came to one patient. He injected the same solution, but the patient immediately collapsed, and it took all the ability of the Illinois State Dental Society to save that patient's life. That is typical of cocaine not only in different individuals, but very frequently in the same person. You may use cocaine of a certain percentage in a patient to-day, and use it on the same patient in the same strength a month hence, and have the second operation prove disastrous.

In 1894 I wrote an editorial cautioning dentists against the indiscriminate use of cocaine. Shortly after that a case was reported in Indiana of a man who had applied for extraction of a tooth. The dentist injected cocaine, and the operation was successful. The patient came back a month later, apparently in the same health, to have another tooth extracted. On account of the delightful experience he had had with cocaine in the first operation, he demanded the same treatment for the second tooth. The same strength of solution was used as in the first case, and it was apparently used in

the same way, but the patient collapsed and died. It is the one feature in the use of cocaine that has always made me afraid of it. I do not believe that any man, no matter how long his experience with cocaine may be, can predict what it will do. We know more about the action of ether, chloroform and nitrous oxide than we do about cocaine. However, that is merely a word of warning, and I feel that if cocaine were used as advised by the essayist, it could be used safely. I do not use it extensively in my practice; in fact, I do not seem to have much necessity for its use. I am seldom obliged to cause much pain in the application of a clamp, and operations of that kind. I have always found that where gum tissue was painful from inflammation that I did not get good results from the application of cocaine. You can take normal gum tissue and obtund the sensation much better than in an inflamed gum.

I have used it for the removal of pulps and in emergency cases should do it again, but I have had some difficulty in that regard, because of a sensitiveness following its use and the uncertainty in regard to the perfect removal of the pulp. With these limitations I think that it is a useful drug, and I am glad that the essayist has written upon it as he has, because it is the most perfect presentation of the legitimate use of cocaine that I have ever heard.

DR. F. J. CAPON: I have used cocaine rather indiscriminately, in a one per cent solution, in pyorrhoea when I am scraping the roots of teeth, and get much better results with a one per cent solution than with a five per cent solution. I believe the reason for this is that a stronger solution acts as an astringent, and does not permeate the tissues as well as a weaker solution, which is not so astringent. I have never had a single case of poisoning in all the years that I have used cocaine in this way. I fail to see how it is possible to do good work in pyorrhoea and not cause a great amount of pain to the patient without using cocaine.

DR. E. J. PERRY: I cannot agree with the essayist on the matter of cocaine and its uses in dentistry. I tell you, gentlemen, you must be careful how you use cocaine. The time was when I thought it all right to apply the cocaine locally, so long as I did not use the syringe and inject it into the blood current, but about a year ago I had a patient who had some trouble with her nose and throat, and I advised her to step into Dr. Kellogg's office. Before making the examination he took the precaution to wipe out the nose with a little pledget of cotton saturated with a solution of cocaine. He

had not much more than swabbed it out, before the patient collapsed. He applied restoratives very freely, but it took us over six hours before the lady was able to leave the office. As Dr. Johnson says, you never know what cocaine is going to do.

I have practically abandoned the use of cocaine in the extirpation of pulps, because of the hemorrhage that so frequently follows. A blood clot left in the pulp chamber is just as bad as pulp tissue. I devitalize the pulp with arsenic and do not attempt to remove it before the expiration of four or five days, or even a week. I am willing to wait two weeks, or three weeks, if necessary, in order to remove the pulp without occasioning any pain. I use chemically pure sulphuric acid to cleanse the canal, and the root, following it with soda. I never had any success with cocaine applied to the gums. I would expect about as much result from its use as I would from an application of rain water. For an aching tooth our old friend carbolic acid cannot be beaten.

DR. E. A. ROYCE: At the meeting of the State Society last May I was watching a dentist cleaning the teeth in a case of pyorrhoea. The operator looked up at me and said, "Here is a man who does not clean teeth properly. He is afraid to use cocaine." So you can imagine that I do not use cocaine very much, but I do use it in pyorrhoea. I take the precaution, however, to have the tooth surrounded by a napkin and have the saliva ejector in use to keep the cocaine from flowing about the mouth. In that way I succeed in cleaning the teeth in a manner I cannot do without the use of cocaine. Most of the use I have made of cocaine has been on the lines as laid down in the paper. One of the places where its use gives my patients considerable satisfaction is the one that Dr. Johnson spoke of as not needing it. I have to use the clamp occasionally, and find that sometimes the shape of the tooth is such that I have to put the clamp on pretty low down, in order to keep it in place, and sometimes the clamp goes down in spite of me. After the clamp is in place, a very weak solution of cocaine will relieve the pain caused by the clamp, if it is applied above the rubber dam. I am also obliged to use the separator occasionally. Some time ago a mallet was shown here, and my objection was that I could not get as hard a blow as I would sometimes want. An operator said he had killed pulps in teeth with that mallet, and that blow was sufficient. I would like to guarantee that he did not use the separator. I cannot condense my gold properly in teeth that have been separated

without using either a separator or wedge, and I find that a little cocaine helps the patient very much. While I have had some patients in whom I was very careful about strength of the cocaine that I applied, I have always been warned in time by the patient, so that I have never had any serious results.

I have never injected cocaine, because the first real exhibition of cocaine I saw was the one Dr. Johnson referred to. I believe they worked about five hours over that patient before she was in condition to go home. That is more time than I have at my command to devote to restoring patients for the sake of an experiment. I enjoyed Dr. Carpenter's paper very much, although he uses cocaine in some places where I do not.

DR. L. L. DAVIS: I am like the Irishman, "I'm agin it." I cannot conceive of any one condition that has been mentioned as being sufficient cause for the endangering of a person's life. The first practical exhibition of cocaine that I saw was the one already mentioned. I used it on several occasions shortly afterward, injecting gums for the removal of teeth, and in each case I had a beautiful slough, when I knew that conditions were favorable. Taking it altogether, my experience with cocaine has been such that I am against it, first, last, and all the time. Pyorrhoea patients suffer just as much if you don't do anything as they do from the little rough usage you can give them in your office. I know if I had pyorrhoea I would be willing to stand it. Patients may object a little, but they feel better afterward.

DR. W. V-B. AMES: I think Dr. Carpenter did not say a word about injecting cocaine. I should think that cocaine might be very safely used about the gingival margins and in pyorrhoea pockets, if it is used with extreme care. I do not hesitate to make such use of it, but I know personally from experience in the treatment of my throat, that it is very easy indeed to get unpleasant constitutional effects. I want to go on record as saying that I have not abandoned the use of cocaine by cataphoresis. The essayist did not mention it, and I suppose that I am one of a few who still use cocaine in that way. While I believe in the efficacy of it in the extirpation of pulps in single rooted teeth I do not believe it applicable in multirooted teeth. I see a case occasionally where I want to extirpate the pulp or anesthetize the dentine, in which I think that I can do it more satisfactorily by cataphoresis than by pressure. I still devitalize some teeth with arsenic, and I wait a good long time, many weeks, if

necessary. From the standpoint of the general surgeon, sloughing is supposed to take place in about a week, but it does not in a tooth. I find it usually takes about two or three weeks, and often longer.

DR. J. H. WOOLLEY: I have used cocaine but little, because of its unreliable effects when administered upon both man and beast. At one of the dental colleges Dr. C. P. Pruyn had a cocaine clinic upon twelve dogs, each receiving a six per cent solution of cocaine hypodermically. One died in the most horrible convulsions; another walked about like a lion in his cage; another laid down on the floor unconscious; and so on, showing that each dog was affected differently and seriously. If we only knew that every case would be successful, or if we thoroughly understood the laws governing the use of cocaine and could feel assured of perfect results, I should feel safe in administering it. In this cocaine clinic the same amount of a six per cent solution of cocaine was administered alike to each dog, and the effect on each one was different. Until we know from wider experience more concerning the chemical effect of this drug on the system, our judgment will be elementary and the use of the drug unwise, unless in exceptional cases.

DR. J. G. REID: I have used cocaine a little. I believe it a reprehensible practice to use cocaine for the extraction of pulps, and therefore I do not pursue it. I will not give you my reasons why, because they have already been touched upon by the other speakers. The one place where cocaine is a most serviceable agent is in the removal of portions of necrosed bone from a small cavity where I want to pack the tissues for a few days. I find that the application of cocaine for a few moments enables me to introduce the packing with much more success and comfort to my patient. I also use cocaine before introducing arsenic to the pulp. I do that in almost every case. I invariably have my rubber dam in position, and am not flooding the mouth with any uncertain percentage of cocaine. I find that I have less trouble with the after-results of arsenic by such a procedure. I have but very little use for cocaine. I do not like it, and I do not like to be associated with it. Hence, I do not associate with it as much as many other dentists. I do not believe that it is a very good agent to be handled.

DR. TRUMAN W. BROPHY: I have nothing to say on this subject, except to refer to that portion of the paper which mentioned cocaine as an agent for anesthetizing the pulp, and this brings up a question

in anatomy and physiology which forces me to run contrary to the general teachings as laid down in text-books. It has been known for some time that though we remove a large part of the bone surrounding a tooth, except the pericementum, the pulp would remain alive. We frequently find that we can remove necrotic bone and leave the tooth covered only by the pericementum, and yet the pulp will remain alive. All our anatomists teach that the branches given off from the inferior dental artery and nerve are in direct communication with the pulp. This question has been under discussion for many years. Professor Cryer, of Philadelphia, has attempted to demonstrate that branches of the inferior dental nerve and inferior dental artery pass directly into the apical foramen to supply the tooth pulp. That has since been demonstrated as being untrue, and yet the books teach it in the old way. I believe Dr. Carpenter's statement is absolutely true, that if you can produce anesthesia of the pericementum by carrying an agent, capable of producing local anesthesia, down in around the neck of a tooth, between the gum and the tooth, down as far as you can, close to the alveolar border, bringing it into contact with the pericementum, you can anesthetize the tooth pulp.

Some gentlemen have raised the question as to whether the cocaine injected into the pericementum at the orifice of the alveoli would not go into the large arteries. No, that would not occur. You might get the agent in contact with minute arteries, and then into the capillaries and thus through the circulation and produce an anesthesia of the pulp by reason of the rich vascular supply of the pericementum and its direct communication with the minute vessels that enter the tooth foramen. When the new works on anatomy are written by men who know this subject, they will no longer make use of these very artistically prepared drawings, especially in reference to the tooth supply, but will make them from carefully prepared microscopic specimens. They will no longer show that every tooth pulp has its own artery and nerve supply.

The late Dr. Frank Abbott, of New York, whose memory we all honor, because of his tremendous energy and work for the advancement of the dental profession, made some microscopic specimens which demonstrated that the tooth pulp was not supplied in the manner as described in text-books, but through a plexus of vessels and nerves more nearly approaching in form the placenta. That plexus lies within the pericementum around the tooth root, and

through that medium the pulp receives its nutrition. If the pericementum is destroyed the pulp dies, but the pulp may be destroyed and the pericementum will not die. Devitalize the pulp, and carry the preparation deep enough so as to involve the vessels surrounding the tooth root, and the pericementum will die to some extent. We see ends of roots around which there is no membrane because perhaps the arsenic has been carried up too far and passed out of the foramen, destroying the vitality of the tissue, and hence we have the end of the root extending up into a carious cavity, but the pericementum, being highly vascular, has been able to resist the destructive agent, and only a portion of it has been destroyed. We have sufficient adhesion of pericementum to cementum, and to the surrounding bony wall, to nourish the cementum and hold the tooth in place, to serve the purpose for which it was made. The statement made by Dr. Carpenter, that we may produce complete anesthesia of the pulp by applying agents around it which anesthetize the pericementum, is absolutely true.

I am not an advocate of the indiscriminate use of cocaine. If we use it at all, we must use it with extreme care. We really do not know what cocaine does in all cases. I have yet to read an article on cocaine that clearly convinces me that the writer knows just what it does. We know that it possesses some power to produce anesthesia, but we cannot say just how much is required in all cases to produce that effect, and yet not produce any toxic manifestations. Hence cocaine is a dangerous thing, even in the hands of the most skilled practitioner. It produces great depression of the heart, and the nerve centers of the brain if carried to the point of poisoning. Some gentlemen produce sufficient anesthesia with a one-half per cent solution to extract teeth, and seem to get along without any trouble. I have always held that whenever any infection occurs following the use of cocaine, it is not due to the cocaine. It is the instrument which was used, perhaps through the lack of thorough antiseptic cleanliness on the part of the operator. I very frequently have patients come to me suffering from necrosis of the jaws, either partial or complete, in which extensive areas of bone have been destroyed, because of the carelessness and lack of cleanliness of instruments on the part of the operator. These are the things we have to contend with all the time, and what dentists need to do today is to get down to the facts about cocaine.

Dr. Carpenter has read an excellent paper on cocaine and its use. Some gentlemen do not believe in cocaine at all, but there is no reason why we should not all know something about this matter. The thing to do is to make a thoroughly scientific investigation of this agent by a committee of men eminently fitted for this work, so that we can tell just what we can do with cocaine, and do it successfully, and without any danger, and to have the danger attending its use so clearly pointed out that we cannot make a mistake.

I believe I have more evidences of the evils arising from the use of peroxide of hydrogen and similar agents than I have from the use of cocaine. This agent can be carried down into the tooth and into the root canals and set up a condition of things that is perfectly appalling. Some men put it into fistulous openings through the alveolar processes and gums, the peroxide comes into contact with pus, which often lies between the pericementum and bone and carries the infection along the border of the bone, setting up a complication worse than the original trouble. They put it into an antrum containing pus, or into a sinus. By reason of the rapid evolution of gas, an immense amount of harm is done, and the infection is forced into regions where it could not get if this agent had not been employed. Somebody will read a paper on some new agent, we think it is all right and we use it, using it in places where it should not be used at all. Peroxide is all right in its proper place, but it is so often used in places where it does much harm. For this reason I have trespassed on your time to sound a note of warning that if you can stop the careless and injudicious use of these agents you will be doing your patients more good than by anything you can do in your office in the matter of caring for their teeth.

DR. A. O. HUNT: One point referred to by Dr. Brophy that was mentioned by the essayist, in my opinion, is the best point in the paper. I refer to the use of cocaine or any other anesthetic as being applied directly to the peridental membrane for the purpose of producing anesthesia. Many years ago I announced the fact that I did not believe there was any sensation in the pulp in the normal condition, and I have not had any reason to change my mind. In 1890 I showed some slides before the American Dental Association, showing the circulation and blood supply of the teeth, and also sections which showed distinctly that the blood supply does not go directly to the pulp. More than ever have I been confirmed in this view by the case of my friend to my right. About a month ago he had an accident, breaking off his incisor teeth. The pulp in his teeth was not

sensitive to touch or pressure. Normal pulp can be handled by instruments or anything else without producing the slightest pain. There is no question about that in my own mind, as I have demonstrated it time and again. I have yet to see the evidence that will prove conclusively that there is any nerve tissue within the pulp itself. There has never been any technical preparation by histologists that has brought out this point. The tooth is developed in a manner where these tissues are not essential to the pulp. The peridental membrane is the vital organ of the tooth, and as long as that is alive and performing its function, the tooth is useful. We see that demonstrated clinically every day. Many pulpless teeth are decidedly useful because the peridental membrane is alive.

I do not use cocaine very much because I do not find much occasion for it.

DR. CARPENTER (closing the discussion) : I have been very much pleased with the discussion of my paper, and the fact that the discussion diverted and left the text of the paper has pleased me beyond measure, because it has been a warning. Cocaine is a dangerous drug to trifle with. I aimed to deal with it entirely from the point of local anesthesia. I made no mention of using it hypodermically; in fact, I condemned it.

In using cocaine under pressure for pulp extirpation in molars, if I find that there is still a small portion of pulp tissue left in the small tortuous anterior canals of lower molars, and the buccal canals of upper molars, I make another application of cocaine under pressure, and I have always up to this time been able to remove these small particles without any trouble. There is no doubt that cocaine can be used in the ten anterior teeth with less trouble than in the molars.

So far as carrying septic matter beyond the root canals, through the apical foramen, and into the apical spaces, I purposely mentioned in my paper, when speaking of pulp extirpation, that I used it in fresh exposures. If I have a condition of putrescence I do not use it. You can have a highly inflamed pulp tissue without having it putrescent, and I have used it successfully in many such cases.

In giving you my theory of the method of pulp anesthetization through the medium of the vessels around and in the pericementum, I can only make that deduction by virtue of the fact that in the last six years I have been forced to notice that where I have anesthetized the pericementum as well as the gingiva, I have almost invariably obtunded the dentine of the tooth itself.

CHICAGO DENTAL SOCIETY.

A regular meeting was held Jan. 7, 1902, in the Schiller Building, with the vice-president, Dr. George B. Perry, in the chair.

Dr. J. E. Keefe exhibited new instruments and appliances. (See report.)

Dr. H. A. Cross read a paper entitled "Treatment for the Cure of Disease of the Antrum, and of Alveolar Abscess Which is not Accessible Through the Root Canals."

DISCUSSION.

The discussion was opened by DR. C. N. JOHNSON, who said: Mr. President, Ladies and Gentlemen—I could have hoped that some one else had been appointed to open the discussion on this paper, because there are other members of the society who are more familiar with this class of work than am I, and inasmuch as others are to follow me, I shall be brief.

I would like to express the hope that all of the members of the profession were as much in earnest in regard to the management of these chronic alveolar abscesses and the saving of teeth under these conditions as is the essayist. It is true that throughout the profession generally there is a laxity when it comes to an extended treatment in regard to these cases, and, as he has said, the forceps is often used when it should not be. There is a change going on in the profession though. Men are taking greater pains to cure these cases than formerly. I do not believe the same percentage of abscess cases are consigned to the forceps to-day than formerly were. In the operation referred to, going through the alveolar process, taking off the end of the root and burring out the diseased bone, as outlined by the essayist, in those cases in which I have done that, I have never found it necessary to administer a general anesthetic. My experience with these cases is that they are usually not very painful, and it is more the impression that it made upon the mind of the patient as to the heroic nature of the operation than anything else which causes the patient to flinch or to make any complaint. I do not believe any of the ordinary cases I have seen would call for a general anesthetic. If you explain to the patient what is to be done, it may seem formidable to them, and the only thing to do is not to explain too much, but go ahead. As a rule, you can bur out all the bone necessary to stimulate healthy action of the tissues and bring about a cure with very little pain.

The essayist spoke of the use of chloroform in preference to nitrous oxide gas, on the ground that nitrous oxide gas was temporary in its action. Recently nitrous oxide is being used in such a way that anesthesia may be prolonged with it almost indefinitely, or long enough to enable the operator to do any operation of that character. Dr. Heckard, of Indianapolis, has extended or prolonged anesthesia with nitrous oxide gas and has demonstrated it to the profession, and under these conditions if an anesthetic is indicated at all, nitrous oxide gas would be preferable to chloroform. I am averse to the administration of a general anesthetic unless it becomes absolutely necessary.

Just one word in regard to the treatment of the diseased antrum leading from a diseased root. It seems to me, that the treatment outlined by the essayist is good in every particular; there is only one limitation I would make in connection with it, and that is, in those cases where there is an appreciable amount of pus, I should not feel like injecting pure hydrozone. Even if it does not do the patient any injury, it alarms him. I think a member of this society could give conclusive evidence of a startling nature in reference to the use of that agent in the antrum of the patient. Outside of that, I must commend the paper, and I trust the discussion of this subject will be profitable to the members of the profession.

DR. C. P. PRUYN: The last speaker has covered the ground so thoroughly in commendation of the paper as a whole, that I have nothing to say on that score except to reiterate his statements of commendation.

With regard to the use of general anesthesia for operations of this kind, on general principles I would condemn it. When we use chloroform we should always appreciate the gravity of the case, and the responsibility that rests upon us. When we put a patient almost at death's door for a local operation that might possibly have been done with greater safety without a general anesthetic, I think most of us would prefer taking the lesser chance. Of course, there are a few cases where it is absolutely essential that we should give a general anesthetic, but they are comparatively rare for the operations indicated. I would like to commend the novel method of using a cotton-wrapped cord dressing. It appeals to me as being a sensible kind of dressing to use for such cases. It must have advantages over the ordinary cotton in many ways, putting a knot on the cord and leaving the extended ends so that they can be caught and removed.

But in many other cases a gutta-percha dressing is preferable to a cotton dressing. Gutta-percha itself is comparatively innocuous, and is not apt to be absorbed, and can be made a little smaller each time much easier and nicer than anything else I know of. It protects the wound, which cotton does not do so well. Let us take the prolonged chronic cases of disease of the antrum, which may have existed for a number of months or sometimes years, and they do not always heal in thirty days, and there are oftentimes reasons for it. In many instances, growing out from the floor of the antrum, there are small septa, and these prevent drainage. In many of the cases of prolonged disease of the antrum, if you examine them carefully, you will find these small septa. I have examined a number of cases, and I have found them in that condition, both in the mouth during life and afterward. I have a specimen here of an antrum having two well-defined septa growing out from the floor of the antrum. I will pass it around. When we come across one of these chronic cases the thing to do is to make a good free opening. If you perform a surgical operation, do so; don't have any halfway work about it. Do it vigorously, and in many cases a good place to operate is just posterior to the canine fossa, just above the roots of the bicuspid teeth. Here the outer plate of bone is thin, and you can reach in nicely, making an opening large enough to introduce the end of your little finger, and oftentimes you can see what you have. If there are septa, you can see them, feel them, and curette them, and in many instances it is absolutely necessary that the septa should be removed, and you should curette not only the floor of the antrum, but the sides as well, for you often find the mucous membrane so diseased that unless you resort to radical treatment, you may go on and use boracic acid and other agents from now until Doomsday, and not accomplish a cure.

Another method I have used in some of the chronic cases is to make two openings. I make the opening I have just described, and another one through the cavity of the nose. Take a three-pointed trocar, about the size of this small pencil, you can reach in nicely. You make the opening in the antrum below the antrum maxillare, some distance below it. Naturally the opening from the antrum into the nose is somewhat high and does not drain naturally. By crowding up the ala of the nose in this position (indicating), you can reach back without much trouble and easily go through the bone, as there is only a small plate, and pass the instrument right in. It is necessary to maintain drainage in that way for some little time.

I take a piece of drainage tube in some cases about the size of this pencil (indicating), and fold the rubber tube on itself, draw it through, and let the folded end remain in the nostril; the other end passes down through the opening I have made in the mouth. The tube is ligated to some of the teeth in the mouth. The patient can wash out the parts through this tube. He can use a syringe, put it in the opening in the nostril, and wash through the antrum and through the mouth easily. This will save the patient much trouble and time, and it is not a serious operation to perform. Almost any one with ordinary skill can do it, and in many cases it can be done under local anesthesia. But, as a rule, the operation I have indicated had better be done under a general anesthetic. It is not necessary to maintain the patient in a general anesthetic condition very long. I should have said that the tube is fenestrated, so that the openings allow it to flush into the antrum.

With reference to the use of peroxide of hydrogen, I do not think it should ever be used in any enclosed cavity unless you have two points of egress for it. You are familiar with its expansibility, and on that account if you inject it into an enclosed cavity, as I have done it once, you must have plenty of egress for it. Were I to come across a case of extensive pus formation, I would first try and remove as much of it as possible with an antiseptic wash before I would use hydrozone or any peroxide of hydrogen preparations. The essayist spoke of using a saturated solution of boracic acid, which no doubt is very good, but something else added would be better than boracic acid alone. Dr. Freeman has a preparation that he calls borate of cassia. It can be used nicely in such cases. It is a cleansing preparation and a good germicide.

There may be cases where you want to reach the end of the root, and if you have an abscess which has not penetrated the antrum, the method described by Dr. Black some eighteen years ago, of going through the tissues with carbolic acid, is valuable. To those of you who do not know about it, I will mention it briefly. Let us suppose a case of abscess of either of the bicuspid, as an illustration. You raise the lip as high as you can; take an old-fashioned serrated hand-plugger, dip it in the carbolic acid, and introduce it with a vibratory motion. Withdraw it, dip it in the carbolic acid again, and then make another vibratory motion. You will enter the antrum without any trouble. If you do not care to go through the antrum, you can go through the soft tissues very nicely. Carbolic acid acts as an an-

esthetic on the tissues beyond where you are working. You can go through periosteum easily, and through bone with marvelous rapidity, and reach the point where you wish to evacuate pus. You will be pleased with this method. In cases where you have doubt about the condition of the antrum, and think possibly that the antrum is diseased, or there may be pus there, and still you have some little doubt about it, you can make an exploratory incision with the aid of carbolic acid in this way, and find out to a certainty, and if you should make a mistake you have not done any harm, because the opening will close at once, and no bad result will follow.

DR. THOMAS L. GILMER: In the first place, I wish to commend the excellent paper of Dr. Cross. It is clean-cut, sounds well, and I think it will read well.

Dentists, as a rule, do not undertake these operations. They dread anything that partakes of the nature of a surgical operation. The younger members of the profession are doing these operations more frequently to-day than do the older men, probably because they are seeing them done in the dental college clinics, and are becoming more familiar with surgical procedures. There is no reason why a dentist should be afraid of cutting off the ends of roots of teeth and burring out carious bone about them, because there is scarcely any risk attached to it. It does not require as much skill to resect the root of a tooth as it does to make good fillings in teeth. If I correctly understood the essayist, he intimated that he would cut off the ends of the roots of teeth in such cases where there were wood points and imperfect amalgam and cement fillings in the roots without first removing these materials. I should not expect very good results did I leave a wood-point in the root of a tooth, although I might remove the diseased tissue about the end of the root or remove the ends of the roots themselves. I should first make an effort to remove the imperfect filling and other material from the root. I should hope to get two-thirds of the length of the root free of this material before resecting it. Then I should thoroughly disinfect the roots and fill them as perfectly as can be done, as far as the material had been removed, I would then be ready to resect the roots, but not before.

The essayist spoke of using chloroform as an anesthetic in these cases. This has also been referred to by Dr. Pruyn. I doubt whether it is ever justifiable to administer chloroform for such operations. We know that it is a most dangerous anesthetic. It is undoubtedly

true that a patient under partial anesthesia as suggested by the essay is attended with more danger than when under complete anesthesia, on account of the greater possibility of shock.

The essayist speaks of cutting out necrosed bone. I do not often see necrosed bone, especially on the upper jaw, and unless he means to use the word synonymously with caries, I should say that he is in error in the term he uses. I had supposed that diseases of the bone about the ends of the roots of teeth such as referred to was caries and not necrosis. If it were necrosed bone the probabilities are that he would not bur or curette it, but would use an antiseptic irrigation and dressing to render the parts as nearly aseptic as possible, and then stimulate so that nature may throw off the necrosed portions. It is often necessary to resect the end of a root in order that we may be able to get behind it to remove all the carious bone. It is difficult to cut off the roots of teeth with a round or fissure bur alone, and an easier and better method is to use, after we have gone through the bone, a spear-shaped drill, as soon as the root is exposed, and drill directly through it at the point we wish to sever it, and then in the hole thus drilled insert a cross-cut fissure bur, and cut both ways, right and left. By this means we sever the root with ease. It is difficult to control a round or fissure bur on the side of a root for the purpose of resection. The means I have mentioned facilitates the operation very much.

The essayist spoke of using absorbent cotton for the purpose of packing the cavity in the bone and for drainage. This material becomes quickly infected, therefore I prefer for this purpose iodoform gauze. Of course, objection may be made to iodoform on account of its odor, but a small piece of iodoform gauze used in this way is not unpleasant.

The use of hydrozone is certainly correct, after burring out all of the carious bone and resecting the end of the root. By using a sharp steel probe, passing it into the sides of the walls, we may determine when we have reached good sound bone.

I am inclined to use, in addition to the detergent recommended, aromatic sulphuric acid in dealing with carious bone. It does not dissolve bone to any appreciable extent, but it is an excellent stimulant to the part, and is antiseptic. I use it in a strength of about from fifty per cent to full strength.

Resection of the roots of teeth has its limitations. It is applicable for the six anterior upper teeth, and may be used on the lower an-

terior teeth, but it is not so easily done on the lower as it is on the upper. Furthermore, it may be used in some instances on the anterior buccal roots of the first and second molars; on the lingual roots it is difficult, and I doubt whether it is often desirable that it should be attempted. Sometimes we find a lingual root that has lost its covering; there has been a great deal of absorption of the gum as well as of the peridental membrane and the bone. In these cases we may cut off the lingual root entirely and leave the tooth supported by the buccal roots, and it will do good service.

I feel a little skeptical about that part of the paper in which reference is made to cutting into the antrum for the cure of these cases. I think I would wait a little while to see if I could not cure the case before opening into the antrum. If there is positive antral complication, and if we know that the disease in the antrum is caused by the root, then the removal of the root may be undertaken; but it is generally difficult to determine this fact. I had not supposed that the essayist expected us to consider diseases of the antrum in general, therefore, shall say very little about it. In a general way I commend the treatment suggested by Dr. Cross, but think it was not intended to fit the class of cases referred to by Dr. Pruyn. I would use normal salt solution for purposes of irrigation in the cases referred to by the essayist in preference to hydrozone. This would be followed by a saturated boracic acid solution, with the addition of one drop of oil of cassia to two ounces of the solution.

DR. C. E. BENTLEY: There is but little left for me to say on this subject; but I want to compliment the essayist on the *suggestiveness* of his paper. I cannot agree with all that has been said by him with reference to treatment, but surely the paper suggests some thought and stimulates some of our best ideas on this much mooted subject. In a general way, I will epitomize what I have to say in a few words. I am opposed to general anesthesia for the treatment of antral cases, or for the excision of the roots of teeth. I think, as the other speakers do, that this operation can be done without the dangers that attend general anesthesia. There are combinations of cocaine to-day that are available to the profession whereby this operation can be done with the coöperation of the patient, and also without the danger that is attendant upon the administration of chloroform or ether anesthesia.

I am also opposed to the use of cotton as a means for drainage, as has been recommended by the essayist. Cotton of itself is septic

unless it has been thoroughly sterilized, and you are introducing septic matter into a cavity that has no means of sterilizing itself, and as there are so many other things that are preferable to cotton, I must say that I cannot see the advantage of its use in any cavity, be it a cavity that has been made by the dentist himself, or made by the formation of pus in the antrum. I prefer gauze. I do not like iodoform gauze, as has been advocated by Dr. Gilmer, who is an excellent authority. I abhor the use of iodoform gauze on account of its nauseating effect. It has a horrid taste to the patient, and boracic acid gauze possesses possibly all of the benefits and has none of the disadvantages of iodoform gauze. I am opposed to the lubrication of any of these tampons, if we may so term them, for the same reason that I am opposed to the use of cotton. If you mean you lubricate a piece of cotton with vaseline, you are infecting or liable to infect a wound that should be aseptic, and I cannot see the advantage of lubrication, and you are introducing microorganisms there, the character of which you have no means of knowing, and I think it is a dangerous procedure.

I desire to emphasize what Dr. Gilmer has said with reference to necrosis. There is a distinct differentiation between caries and necrosis, and where necrosis has ensued, no operation should be made until a line of demarkation has established itself. In other words, no surgical interference with the part should be made until the line of demarkation has made it safe for us. If it be caries, it is quite a different thing; we can go in with our curette or bur and remove the carious bone.

With reference to the treatment of diseases of the antrum, I am opposed to the use of hydrozone in the antrum. It is an excellent agent, one we use nearly every day in our practice, and one of the most potent agents we have for many of the complaints with which we have to contend, but hydrozone in the antrum is a dangerous remedy on account of its volumetric expansion in a confined space. I have never injected hydrozone, pyrozone, or peroxide of hydrogen into the antrum, and I do not think I ever will. As long as we have other agents that are more potent for searching out pus, I shall not use those agents. If the antrum is to be operated upon, I am in favor of making the operation heroic, as has been suggested by Dr. Pruyn. The operation should not be made, in my opinion, as near the canine fossa as Dr. Pruyn has suggested. I believe the best possible results that can be obtained now in operating upon the antrum is to

make the incision between the first molar and second bicuspid. There is the best position to make the opening, and when you have decided to make such an opening, it should be made large, so that you can see into all parts of the cavity. There may be a polyp or a cyst in the antrum besides pus, and you want to know what is there. Curettement of the partitions of bone is largely theoretical. Some partitions of bone cannot be curetted out. If you will examine a large number of antra, you will find that this partition is bony in its structure, and you cannot curette it out; you may cut it down with a bur, but I do not see the necessity of that when the means of irrigation and of drainage we have to-day are so potent in the treatment of antral diseases, unless the floor of the antrum is carious. The most advanced ideas upon antral diseases to-day have been given to us by the Germans. In this connection permit me to deviate a little from the class of antral diseases that arise from infection of tooth substances, as it is germane to the subject. I refer to those cases that require prolonged treatment, extending over many months, possibly exceeding the domain of the dentist and coming within the domain of the rhinologist. The Germans claim that a very large percentage of the antra that are infected are cases in which collaterally the ethmoidal and frontal sinuses are affected. For instance, the original lesion may be in the frontal sinus, due to a traumatism, or it may have occurred from some one of the zymotic diseases, such as scarlet fever, diphtheria, croup, etc., and it may originate in the frontal sinus from the dropping of pus from the frontal sinus down through the opening leading into the antrum, and we may be called upon to treat antral disease when the primary lesion may be in the frontal or ethmoidal sinus, and we wonder why there is a continuation of pus when we have not really gotten at the seat of the disease. German physicians, as a precautionary measure, advocate and recommend that we consult with rhinologists in this class of cases; that is, in every case of antral trouble, where it is not of recent origin, or wholly due to an abscessed tooth, that the anterior end of the middle turbinated bone should be clipped off, in order that the rhinologist may establish drainage of the frontal sinus, and in order that we may have also complete drainage through the nasal passage, thereby preventing any infection of the antrum, and establishing free drainage through the opening of the antrum into the nares. This method is being practiced to-day by the most advanced rhinologists of Germany, and I believe it is likewise being done by the most advanced

rhinologists of Chicago. This brings us to the point that we are liable to lap over into the domain of the rhinologist in the treatment of antral affections, and it were better, it seems to me, to consult rhinologists in cases of prolonged antral trouble.

My experience with antral disease is, where the infection is due to abscess of the teeth *per se*, that the cases are of short duration unless there is carious bone. The mere extraction of a carious root might possibly effect a recovery, unless there are complications. But there may be a corresponding infection of the ethmoidal and frontal sinuses from secondary infection of the antrum from a carious root. When we have that condition it is serious and complicated, and it may become necessary for us to consult a rhinologist. So much along the line of the German method, which I think is worthy of mention at this time.

DR. GEORGE W. COOK: There are two points brought out by the essayist that have been mentioned by the previous speakers, and one is the use of cotton for drainage and for packing. I cannot see why we should use cotton, as Dr. Bentley has said, because it is a source of infection.

In regard to opening into the antrum and treating it with gauze, personally I take borated gauze and dip it in a ten per cent solution of chinosol, pack the entire antrum with it, leave it there for twenty-four hours, then remove the packing. When I have done this I feel reasonably certain that I have an absolutely aseptic antrum. Then, instead of using what has been known as the gutta-percha plug, I use gauze, roll it to the size desired, and then put a coating of collodion over it, and insert that. After we have opened the antrum, or after we have opened any of these wounds, what we want to establish is an absolutely aseptic condition.

Dr. Gilmer spoke of the use of sulphuric acid in diseased bone conditions. I think I have mentioned once before the use of equal parts of carbolic acid and sulphuric acid, which is a bland preparation. It is not so irritant as is the sulphuric acid alone. It is more antiseptic, and has more affinity for the microorganisms involved in the disease than has any other agent we can use outside of chinosol.

DR. TRUMAN W. BROPHY: I must commend the essayist for presenting this subject in the form that he has. But were I to suggest the title of the paper which he read, I should have suggested that he call it "Dental Alveolar Abscess with Complications," and in presenting this phase of it in connection with the antrum, I would

have named it also "Abscess of the Antrum, or Empyema of the Antrum, with Complications."

In the first place, he describes ordinary chronic alveolar abscess, and then goes on to tell us about something else which is not alveolar abscess, and that is why I would name the paper "Dental Alveolar Abscess, with Complications." Simple dental alveolar abscess, though chronic, is amenable to successful treatment by a simple process known to every dentist. But when we have a dental alveolar abscess with complications the treatment for the abscess alone will not effect a cure. I make use of the term dental alveolar abscess, so that when we name it a physician engaged in the general practice of medicine would not think we meant an abscess of the alveoli of the lung or of the kidney, or of any of the other organs of the body. I believe it is necessary for us, in our association with medical men, to make use of the term dental alveolar abscess, that we may locate the abscess, otherwise we might be misunderstood by those who are not dentists, and very reasonably misunderstood.

It is not necrosis, as Dr. Gilmer and Dr. Bentley have stated, that we have usually in cases of this character in the way of complication, but it is caries, and there is a vast difference between caries of bone and necrosis of bone. We make a fine distinction between caries of teeth and caries of bone. If I am permitted, Mr. President, I will try to make a dividing line between the two. For instance, we have caries of bone, a condition resulting from the loss, first, of the organic matter of the bone through a destructive inflammatory process; and then we have a bony matrix, or inorganic matrix, left, which is porous, by reason of the loss of the organic matter, and when an instrument is brought in contact with it, we find that it is rough. You may penetrate it here and there with a fine steel probe. We cannot move it from side to side; it will not exfoliate, but gradually break down; that is, we have molecular destruction of bony tissue, and that is caries of bone. In caries of bone the organic matter is destroyed first. In caries of the teeth we have, first, the destruction of the inorganic matter of the tooth substance, and the organic matter left is a semi-cartilaginous appearing mass, which, when excavated, will be found to be soft, and will roll out in a leathery mass, as we see it in large cavities where the structure is not broken down absolutely. Then we have destruction of the organic matter. In necrosis, we have destruction of the organic matter by a rapid process of inflammation, which overwhelms and arrests the circulation

in the part, which causes the organic matter to rapidly enter into dissolution, the area of inflammation is marked by a line of demarkation and the bone in which stasis has occurred, dies *en masse*. That is the difference between necrosis and caries. Caries is a molecular destruction, while necrosis is a destruction of the part *en masse*, and nature exfoliates this mass of dead substance. It is of no use in the economy, hence the economy casts it off. We do not have such a condition of things following dental alveolar abscess, yet this condition may arise as a result of a single dental alveolar abscess at the apex of the root of a single tooth. Necrosis may cause exfoliation of the bone of several teeth that are not pulpless, that have no condition about them which would lead to alveolar abscess. Caries should be treated in the manner that has been stated, namely, take it away. It is not an abscess, although it is a condition which was brought about by inflammation and an abscess. An abscess forms first at the apex of the root of a tooth, then the pus becomes infiltrated into the organic matter of the bone, and we have ostitis, and then an inflammatory process continues for a little time, and from the infection of the alveolar abscess itself we have suppuration of the organic matter of the bone, and gradually the organic matter is thrown out, leaving a bony matrix, and we have caries. The treatment in such cases is to remove the diseased bone tissue—bone that has lost its vitality, that is no longer useful and serves as an irritation to the surrounding parts, leading to destruction of the tissue by means of the infection which it contains, the tissues being wasted by this infection. To prevent further loss of tissue, or further destruction of tissue, it is necessary for us to remove the carious bone, as has been related. It does not make much difference how we do it, if we do it well, and that portion of the root which stands up in the cavity, that has lost its pericementum, its source of nutrition must be taken away, so as to have remaining part of the root covered with pericementum. When we remove the carious bone surrounding the end of the root we put the parts in good condition to fill up with new, healthy granulations.

A word or two with reference to such agents as hydrozone, pyrozone and peroxide of hydrogen. I would not use any of those agents until I had first irrigated the cavity and removed all pus and other secretions. I do not want to cast any reflection on the essayist in the slightest degree, but I really think pyrozone, peroxide of hydrogen, and hydrozone have done more harm by their injudicious use in den-

tristry and surgery than any other agents that have come to our knowledge within the past quarter of a century. Let us take, for example, peroxide of hydrogen. The danger comes from putting it into a cavity containing pus, on account of the rapid evolution of gas and its expansive powers, carrying the infectious material to regions far beyond those already involved in the disease process, and especially downward far beyond the line of the tissues involved in the inflammatory process. I am satisfied that in one case which came under my observation the frontal sinus and ethmoidal cells became involved by infection through the use of this agent. A gentleman in his enthusiasm in the use of hydrozone or peroxide of hydrogen introduced it into a cavity in which there was considerable pus. The result was infectious material was carried beyond the original site of the disease and caused considerable trouble. I want to utter a word of caution about the use of these agents. Why not take sterile water, irrigate thoroughly, and wash the pus out first, using a boracic acid or carbolic acid solution, anything that will not do harm, removing all of the infectious material that is floating about, and finally using hydrozone as a means of destroying any little shreds of infectious material that may cling to the walls of the cavity. That is all you need. I would not use cotton in a cavity, nor anything else, such as has been described. I would not hesitate to use iodoform gauze for forty-eight hours, then take it out, irrigate thoroughly, examine the parts carefully by means of artificial light to see whether there was anything left which should be taken away, and if so, take it away. I would make a plug of this gauze, my sole purpose being to keep the orifice of the wound from closing. If the mouth of the wound closes, you have a circumscribed cavity in which fluid will continue to accumulate and necessitate a second operation. The principal thing to do is to keep the orifice of the wound open, so that granulations will form, if the tissues are kept healthy. Keep the wound open and let it granulate from within, and when the wound fills so that you cannot keep the gauze plug in any longer, take it out. You may not need it any more, and the patient is practically cured.

I want to say a word or two about the antrum. I stated in the early part of my remarks that perhaps it would have been better for the essayist to have given this title to his paper, "Antral Disease with Complications." The essayist has limited his discussion to one form of antral disease, and that is abscess or empyema of the antrum.

When one begins to speak about pus within the antrum, he takes upon himself a subject which involves a great deal. We have the possibility of disease of the frontal sinus, of the ethmoidal cells, of the infundibulum, nasal passages and turbinated bones, and the complicated anatomical structure forming the nasal passages. These may be involved in diseases of the antrum. Let us look at the specimen, for example, that has been passed around by Dr. Pruyn. The roots of the teeth stand up in the antrum, with no intervening septum of bone, covered only by membranes over the ends of the roots, and in many instances separated by the thinnest lamina of bone between the cavity of the antrum and the ends of the roots. If the pulp dies and abscess forms at the ends of the root, where is the pus going to escape? Of course, you all know that pus follows the course of least resistance, and that course is into the antrum. It would not, under such circumstances, penetrate and pass through the external alveolar plate or pass in some other direction. There are undoubtedly thousands of people suffering to-day from what is known as empyema of the antrum who do not know that they have antra. These people know they have some trouble in the nose; they have great inconvenience when they are the subjects of colds, and when these conditions are aggravated by external influences and atmospheric conditions, but they do not realize any complication of this kind, and it is a fact that those who are engaged largely in the treatment of these diseases now and then find cases where empyema of the antrum has existed for many years. Dr. Black can tell you of people who have tolerated abscess of the antrum for ten or fifteen years, until the bones were lost and the entire maxillary process was lost through the gradual process of destruction before the patients awakened to a full realization of the magnitude of their trouble, and then extensive operations were necessary. These cases are not uncommon. There are people going around the world to-day suffering from what they consider post-nasal catarrh, with suppuration, a large percentage of whom have empyema of the antrum. The acute simple cases are quite as amenable to simple treatment as any other inflammation of a mucous membrane. If we can get at it and remove the cause of the pathological condition the patient will get well promptly. But if the disease is permitted to go on until it becomes chronic, until the mucous membrane and periosteum have been lost from the process of inflammation, then we have a complication or complications, caries possibly, besides we may have some other

important cavities involved, such as those I have named. The proper course to pursue, if the disease has become chronic and will not yield to ordinary medication, which must be accomplished largely by means of drainage and irrigation, is to make an opening large enough to remove morbid conditions that may be there. It has been my experience that in a great many of these cases we have a number of polypi formed within the cavity, and anything like the injection of the ordinary antiseptics avails almost nothing. The course to pursue is to open the cavity freely, so that we can remove the polypi.

It is quite safe to say that seventy per cent of all chronic cases of empyema of the antrum of Highmore are attended with polypi, growing from the mucous membrane surrounding the antrum, which are the result of a long, continuous irritation and inflammatory process, and we cannot remove those polypi through a small opening. I have seen small tubes not larger than the ordinary excavator handle introduced for the purpose of draining the antrum. Such tubes are practically of no use except as a means of drainage in the acute simple cases. But when the case is chronic I would make an opening through the canine fossa sufficiently large not only to admit the finger, but the thumb. After washing out the cavity, pack it with iodoform gauze; let the patient alone for forty-eight hours, remove the gauze, irrigate and pack it again. Remove the gauze again after a certain length of time and repack. In other words, I would continue the process of irrigating and repacking for a week or more. I would put the patient in a strong light and by means of a small incandescent electric light make a careful examination of the interior of the antrum, then I would know what is the matter. If I found pus dribbling from the superior wall of the cavity I might be suspicious of trouble with the frontal sinus. I do not think the members of the dental profession have fully appreciated the excellent work done by Dr. Cryer in regard to the anatomy of the face. He was the first to establish the fact that in many cases there was a direct communication from the frontal sinus to the antrum. I am very glad to have this opportunity of not only giving him credit for making this important anatomical discovery, but I want to express my appreciation of his efforts in doing it, for he has done a great deal for me and, through me, for my patients and in the interest of science generally. I have had some cases in which it became necessary to open the frontal sinus to get at the true seat

and origin of the disease, which appeared to be on the first examination only an antral abscess.

As to further treatment, after we have examined the cavity carefully and found there is no carious bone, no further polypi or no condition present which would interfere with the proper healing of the part, we proceed to irrigate with mild solutions. If I find there is a tendency toward the formation of fungi I would treat such fungi the same as I would those met with anywhere else by making use of a little tincture of iodine, nitrate of silver, etc.

Dr. Bentley spoke of the Germans. The Germans are shrewd in pathology; they are keen in the use of remedies, and perhaps there are more remedies sold in this country in bottles and boxes marked "Made in Germany" than from any other country. What do they do? I have come in contact with several eminent German surgeons during the last two or three years, and these matters came up for discussion in a social way. I find they are using something we have all used; they know its value; they know it is reliable. They are using nitrate of silver, two grains to the ounce, successfully in treating antral abscess, and all of the coal tar products and all of the other agents that have been named here this evening have been set aside. Nitrate of silver is regarded as a sheet anchor by them in the treatment of these chronic inflammations, and I am satisfied they are about right. It has brought me back to the use of the agent and I am using it more now than I did five years ago, when I was running off to the use of peroxide of hydrogen, pyrozone and other agents. There is one agent which is free from the objectionable quality of producing such rapid effervescence and which has not been named this evening, and that is electrozone. It is not followed by rapid effervescence of gases, though it is powerful in producing rapid oxidization.

DR. G. V. BLACK: I did not think of speaking, but I will say a word or two. I have had a good deal of experience with these antral troubles; some of it has been pleasant, some very unpleasant. Some cases have gotten well easily, some have not. I remember one case in which, after working at it for some time, I removed the whole floor of the antrum. The woman had been to a number of practitioners, year in and year out, for several years. It was an edentulous case. I thought I had exposed the entire antrum, so that I could get

at the whole thing and keep it clean and convert that peculiar membrane into a mucous membrane proper and effect a cure in that way. When I got the poor woman out of her misery, as I thought, I found one of the diverticula that grew up through the antrum had become closed and I had a second cavity to open, quite large, entirely separated and full of pus from the antrum proper. We get all kinds of ugly conditions, but, as a matter of fact, most cases of abscess of the antrum or pus in the cavity of the antrum get well if you just give them a chance. But when you get one of the old cases that has supplicated for ten or fifteen years, with a big hole that will admit your finger, you have a troublesome case to deal with in trying to remove the adventitious tissue that has grown up in there.

I want to raise a question in regard to caries of bone. I think there is a good deal said about caries of bone when there is no proper caries of bone. If we have an abscess about the root of this tooth (indicating), and here is the alveolar process; here it comes down and the gum tissue over it, if we examine that we have an abscess. There is a great pocket of pus there; we examine the cavity and we find a large, jagged opening in the bone and the pus has not been discharged yet. We go in there and discharge it through the canal, and through this open canal we get perhaps a teaspoonful of pus. But the bone is gone. Now, I would call it absorption, and not caries of bone, and most of the cases are simply absorption of bone. In these cases of absorption of bone we have inflammation of the tissue in the Haversian canals, with a rapid absorption of bone. It is removed. The place is taken by soft tissue, inflammatory products. We may find spicula of bone that have been cut off from the remaining portions of the bone in the rapid absorption; yet I should not call that necessarily caries of bone. In caries of bone we have a different kind of infection, and we have the disposition of progressiveness that we do not get in those conditions which we usually find in connection with alveolar abscesses, yet we may find caries of the bone progressing from an old alveolar abscess. But in these conditions, if we come to describe them pretty thoroughly, we will find the enlargement from inflammatory processes of the tissues of the Haversian canal and the absorption of the bone enlarging these Haversian canals rapidly in acute inflammation, the bone disappearing. It is almost exactly the same thing as we have in caries of bone proper. But in inflammations and absorptions nearly all of the bone will be absorbed; whereas in caries of bone

we will have more of the bony tissue left in the necrosed state, in little spicula and broken bunches. Here is the difference: We have a suppurative tendency in one which is progressive and going forward regularly or irregularly to destruction, that is, a suppurative process continuously extending. It is not a simple cold abscess, it is not an acute abscess, but it is chronic in its nature and progresses to the destruction of the bone. It is like an ulcer that fails to heal and it is an ulceration of bone proper. I should make a sharp distinction when we come to describe the two. We find a different form of infection, making a difference in the two processes proper, the one a progressive disease, the other may be stationary. The disease may be in the acute stage and then becomes chronic. The progressiveness diminishes and ceases without progressing or without doing any damage for a long time; but finally it may take on, through some infection, a progressive nature and destroy the tissue about it (abscess), until it is necessary to cut the whole thing away. When we get that condition we want to remove the whole area of diseased tissue and disinfect. But in most cases of chronic abscess we do not have that kind of condition. We do not need to be so heroic as that, except to remove the tissue, and if the root has lost its membrane cut it away as far as it has lost its membrane. If we wish to effect a permanent cure we must get cementum at this point (indicating) and a new peridental membrane over the end of the root, and in some cases we do not get it and in a year or two, maybe less, we will have a new alveolar abscess formed.

DR. REID: You mean you will get absorption of the end of the root?

DR. BLACK: You may get absorption of the end of the root as a result of this operation.

Lastly, I would say that this local treatment must not be undertaken to the exclusion of general treatment. We must remember that general treatment in many of these cases is not only essential, but a prime factor.

DR. GEORGE T. CARPENTER: I have heard a great many good things said this evening, both in the paper and in the discussion. If I understood the essayist rightly, he spoke of passing the knot up through into the antrum. I frequently take strands of ordinary iodoform gauze, say three or four, put a knot on the lower end, pass the strands through and allow the knot to stay just posterior to the canine fossa; that is, in that class of openings where the opening

does not pass through the alveolar process caused by the extraction of a tooth. My object in leaving the knot on the outside is to prevent the passage of the gauze through into the antrum. I have had two of the most offensive cases of disease of the antrum from this cause, the patients coming to me after being under the care of others who had made an opening and had passed cotton through into the antrum. The cotton became thoroughly saturated with pus and acted as an irritating foreign substance in the antrum. On removing the cotton and irrigating the cavity thoroughly, there was very little trouble in effecting a cure.

In operating on the antrum I do not approve of the use of general anesthetics, although there are conditions where it may become necessary to use them. I use a ten per cent solution of cocaine locally applied to the mucous membrane, waiting several minutes to obtain the local anesthetic effect; then, with a hypodermic syringe and a four per cent solution of eucaine, I inject the parts. After which one can operate without producing pain. In making a large opening I prefer a drainage tube to drainage by the use of gauze. The object of the tube is to keep the opening open, and I prefer a tube to a plug, because I may want to irrigate through the tube. I make a little trap door and a little slot; simply raising the trap door and turning it to one side, I can irrigate without any trouble. Some antra are very sensitive and considerable pain may be caused by removing and reinserting this tube, but by having a little trap door you get some drainage and also an opening for irrigation when needed.

Dr. Brophy spoke of the opening closing very readily. The opening will close very quickly unless it has become lined with mucous membrane which is continuous from the mouth to the antrum. This class of openings are difficult to close, and the only way to close them is by removing the membrane or freshening the surface and establishing granulation and keeping it up on the same principle that we reproduce gum tissue.

DR. W. H. G. LOGAN: I wish to say a word or two in regard to the use of chloroform while operating upon the teeth. Dr. Lyman, out of a collection of 440 cases in which chloroform was administered while operating on the teeth, found that the percentage of deaths was fifty-eight. When we stop to consider the infrequency with which chloroform is given when operating on the teeth, it makes the percentage very high. Therefore, on general principles, we

should never give chloroform if we wish to operate on the teeth. It is attended with too great a danger. If we wish to give a general anesthetic let it be ether, and especially let it be ether if we are to extract teeth, for the reason that this agent causes more perfect relaxation of the muscles.

In regard to cutting off the roots of teeth, it is quite a success on the anterior upper teeth, but a failure on the lower posterior teeth.

In reference to the use of a tube for drainage in diseases of the antrum, and I am speaking now of a metal tube, perhaps you may place it too high, and you do not get efficient drainage. For that reason it is well on general principles to employ some other procedure for drainage. In other words, make the opening in preference over the second molar or posterior to the first molar, and you will more frequently find the floor of the antrum. This opening should be large, for the reason that you may have to curette the antrum if the case has been one of long standing.

DR. CROSS (closing the discussion) : I am not going to say very much in closing, because it is late and because I think it is unnecessary.

So far as the use of the terms necrosis and caries is concerned, perhaps the distinction made by Dr. Brophy is the correct one; but I did not have so much in mind the use of these terms. The necessity of removing the diseased bone from the abscess pocket was the thought I wished to bring out.

Regarding the use of hydrozone or peroxide of hydrogen solutions in the treatment of these diseases, you may be surprised to learn that since hearing this discussion I am more in favor of its use than I was in the outset. I did not claim that hydrozone full strength can be injected into a blind pocket. I learned to avoid that years ago, but an abscess opened out as described in my paper cannot in any sense be regarded as a blind pocket; there is a good outlet made through the gum and alveolar process for the escape of the effervescing hydrozone.

In dealing with an antrum case I would expect the members of the profession to exercise their intelligence as to the strength of the solution to be used.

It was stated in the discussion that the antrum is sometimes partially subdivided by bony septa into apartments which are difficult to reach, but this is no argument against the use of a hydrozone solution, for it will be found to be the most effective agent for reach-

ing those parts difficult of access. You cannot do it so well with anything else. The avenues of escape for the hydrozone solution, after it has come into contact with the septic matter, should be the guide in determining the strength of the solution to be used. But I am not so much a stickler as to the methods employed, or the agents used, so long as one is successful. I stated in my paper that "it might be said that any method that is successful is commendable."

Some of the statements made in my paper I realized fully were points open to criticism. I made such radical statements intentionally for the purpose of eliciting a good discussion, and I think my paper has been successful in bringing out such a free discussion from the fathers in the profession, the instructors, to whom we love to listen with so much pleasure and profit.

In regard to general anesthesia in the dental office, I will say that the average dentist has more occasion for its use than the average physician, and I do not see any reason why the dentist should be continually running to the physician when he has a case to deal with requiring general anesthesia. I would like to see the dental profession of the future more independent in this regard, and not be obliged to call upon the physician to do any part of his work.

Here in the city of Chicago, where I have been practicing, I could easily have referred my cases requiring general anesthesia to competent and skillful physicians, but I have not done so. I have administered chloroform and gas to my patients probably hundreds of times, and I never had any trouble. I have been particularly fortunate in this and I believe the dentist of the future should become more proficient in the administration of general anesthetics.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held February 17, 1902, with the president, Dr. C. N. Johnson, in the chair.

Dr. A. H. Peck read a paper entitled "Care of Children's Teeth."

DISCUSSION.

DR. E. M. S. FERNANDEZ was asked to open the discussion. He said: Mr. President and Gentlemen—I do not suppose I can do anything better than to commend the excellent paper of Dr. Peck. I think the care of children's teeth is one of the most important subjects in dentistry, and as a rule it is not looked into as much as it

should be. One very important thing is to advise parents to instruct their children in the care of teeth; when and how to clean them and what to use for this purpose.

In regard to extracting teeth, I do not approve of the dentist doing this himself. This work should be placed in the hands of a specialist who has the experience and who has far better means for doing it than we have. When a specialist extracts teeth for our patients we separate ourselves from the dread that is caused by the extraction, and in that way we are better able to get along with our patients when we are filling teeth for them.

In regard to the material to be used for filling children's teeth, in many cases I prefer oxyphosphate of zinc. If I combined amalgam and cement I should use the cement underneath and the amalgam on top. I would not like to mix them. As to the line of treatment, I am not prepared to say anything about it.

DR. D. M. CATTELL: There is only one point I desire to refer to. I did not know before that tin would ever discolor tooth structure. I am afraid there is a mistake about that.

DR. G. N. WEST: I want to add one thought, which I regard as a very important one. The thought is that we should never deceive these little patients in any particular. If we are going to hurt them in any way they should never be told otherwise. If we can accomplish the work without inflicting pain they can be reassured; but under no circumstances should they be told that we are not going to hurt them, and yet we proceed to do so. I am having considerable difficulty now in the cases of two or three little patients who have suffered at the hands of other operators. If they had not encouraged them by saying they would not hurt them, and then did so, they would have gained their confidence.

The point raised by Dr. Peck regarding the parent being present at the time we are doing dental work for a child is a very important one, because the mother, as a rule, proceeds to instruct the little one by saying, "Now, the doctor is not going to hurt you." She makes promises to the child that the operator cannot live up to. The operator should make his own promises and live up to them, and in this way he will gain the confidence of these little patients better than he could in any other way.

DR. DE BOER, of Utrecht, Holland: Mr. President and Gentlemen—I have made a little note because I expected Dr. Johnson would call upon me to say a few words to you. It is very nice for

those who are able to speak well to be called upon to address you, but I do not belong to that class. However, I will take this opportunity to say something. The dentists in my country who have visited America and who are prominent in our profession are constantly advising those of their colleagues who can do so to make a trip to this country, not only for their professional, but for other interests. If I should happen to meet a friend of mine, a young dentist, who has not settled and who is able to come to America, I should certainly advise him to do so, as there is very much here to be seen, to learn and to admire.

As far as the paper is concerned, I will say that I have had a little experience in regard to the use of amalgam and cement in cases where for some reason or other a gold filling is not indicated, and that occurs often in private practice. I have often used with success a mixture of amalgam and cement, about equal parts, as advised by Professor Miller, not in the simple way of mixing amalgam and cement, but covering the filling with a layer of amalgam. This is applied at a time when the mixture has not yet set. I have seen good results from that method. The advantage of the method over the simple mixture is that the fluids of the mouth do not have any influence on the filling, because they do not have any influence on the amalgam. It is advisable to use amalgam that does not set quickly. It will withstand the forces of mastication. Patients do not use that side of the mouth for full action for the first days, and I have them come back in order to polish the fillings. I would like to hear the experience of others in regard to such fillings, and if any of you have not tried this method I would urge you to do so, and perhaps you will have the same favorable experience as I have had.

I will not let this opportunity pass without saying that I am very enthusiastic regarding the things I have seen in America, not only as far as the dental profession is concerned, but other things. Before my arrival in Chicago I made a little trip, and when time and other circumstances permit I will make another trip before I reach the coast again.

A little more than a year ago I made the acquaintance of Dr. Johnson's book, and I must say to you that I was enthusiastic as I had the book in my hands and read it. I wish to add to what I have already said that I respect the person of Dr. Johnson as highly as I admire his book.

DR. GEORGE B. PERRY: If I understood Dr. Peck correctly, he

stated in his paper that after devitalization of the first permanent molar usually it had a limited life. From the time of devitalization it usually lasted in good condition four to six years. It has not been my experience that this is true in all cases. I think the condition of the tooth as to its longevity is largely due to the care with which it is prepared after devitalization. If all the particles of the nerve fiber are thoroughly removed from the canals, if the canal is thoroughly cleansed and made aseptic and very carefully filled, then a permanent filling placed upon it, I see no reason why it should not last for a greater length of time than the limit placed by Dr. Peck of from four to six years. It depends a good deal upon the constitution of the patient, in addition to the work done by the operator. I have known of first permanent molars lasting for a greater length of time than that, and while I have not taken advantage of my experience in tabulating results, it is my impression that the time should be extended beyond the six-year limit.

DR. DON M. GALLIE: I wish to compliment Dr. Peck on the excellent paper he has presented this evening. I do not know of any subject which is more troublesome and less understood than the care and preservation of children's teeth, both deciduous and permanent. During the last few weeks I began to feel that all the children in town were heading for my office, and while I like the children and can handle some of them successfully, it is the greatest bugbear I have to contend with. We can all fill the teeth of adults; we know how to handle them, sometimes with and sometimes without gloves. But the little children, whose teeth require the greatest care, whose comfort is dependent upon the preservation of the deciduous teeth and whose appearance depends upon them, are an important problem which confronts us. When we realize that children come to our offices ranging in ages from two years up to nine and ten to have dental work done, until they get their permanent teeth, we cannot devote too much attention to their care and we cannot study the matter too closely.

I am not only puzzled as regards the posterior teeth, but when we get proximal cavities in centrals and laterals so sensitive that we can hardly touch them the question arises how we are going to handle these cases. Sometimes I take a nitrate of silver pencil and blacken the teeth so that they are unsightly, yet it preserves them until it is time for them to be shed and the permanent ones appear.

I am afraid of using arsenic for the purpose of devitalization, particularly of the deciduous teeth.

With reference to the treatment of abscessed teeth I have not had the success that Dr. Peck has had. He has seen fit to make use of more thorough treatment, while I have been satisfied to keep the cavities open to give the children comfort rather than plugging them up. I have not as yet reached the point where I advocate rhizodontia, as I believe in many cases we can accomplish the best results by keeping the cavities open. Of course, they may be putrescent, dirty, bad smelling; but the main thing is to give the little tots comfort.

The preservation of the first permanent molar is another very important question, and sometimes so puzzling to me that I am really at my wits' end to know what is best to do, whether to devitalize or extract. In many cases I agree with Dr. Peck in extracting teeth on each side, both first molars in the same jaw, but sometimes the articulation is such that one feels warranted in leaving one. If the crown of a molar becomes broken down so that it is necessary to devitalize the tooth under ten years, the best way is to take it out. If you devitalize the roots and the foramina are large, and the tooth is not fully developed, you take the life away from it to a great extent, and while the peridental membrane will do its duty, you have not got a fully developed tooth. I believe with Dr. Peck that in the majority of cases the life of such a tooth is six years. If that tooth is removed at a time when there is no possible chance of the second molar taking its place, it will tip forward, the second bicuspid will tip backward and we have a dovetailed space, which is remedied only by cutting off two good teeth and putting in a bridge. If the first molar is removed on one side it would be advisable to use a screw between the two teeth to keep them in shape until such time as a bridge could be put in. While this may not be considered good practice and I would not advocate it, yet there may be some cases where it might seem necessary.

This subject of the care of children's teeth is so important that it should be thoroughly discussed, because I believe it is in advance of porcelain inlays and restorations, manipulation of gold and platinum or any other filling material. The children are the foundation of our practice, and by neglecting their teeth we neglect the people who some day are to be our best support. It is not the patient of twenty-five or thirty to whom we should devote most of our atten-

tion, but much thought and consideration should be given to the care of the teeth of the little ones who come to us. Papers of this kind are needed, because we do not seem to be in touch with children to the extent that we should.

DR. A. H. MURDOW: I want to thank the essayist for his admirable paper and I desire to say that I am sorry for those who are afraid, so to speak, of the children. I consider the care of children's teeth one of the greatest subjects in dentistry. It may not appeal to some of you as such, but it certainly does to me. The treatment of children's teeth is one of the starting points of educating people about dentistry and to having dental work done. That a little child should make an operator feel uneasy, as Dr. Gallie has said, I cannot conceive. Ten years ago I might have thought so, but since, in the last eight years, I have dealt with so many children I am not at all afraid of or uneasy about them. In fact, I welcome the little ones to the office. I very seldom see the need of having any trouble with them, except, as the essayist has said, when the mother, father or some near relative is in the operating room at the same time. I thoroughly deprecate the idea of having the parents of the child in the operating room. I prefer not to have mothers come to the office at all. Of course, in a city practice you cannot always avoid this. I have little patients ranging in ages from four to seven years and upward who come and make their own appointments and have their work done. I have two little patients coming to my office to-morrow who made their own appointments; one is six years of age, the other seven, sister and brother.

With reference to the use of arsenic, we should not be afraid of it if it is used in the manner described by the essayist. It should not be left long in the temporary teeth.

I want to add my indorsement of amalgam as a good filling material in the back temporary teeth. Gold is a good filling material to let alone in children's first teeth. I would never put gold in the temporary teeth under any circumstances. Amalgam and cement are all-sufficient, cement in the front teeth and amalgam in the back. The idea of putting in a gold filling for a child in a temporary tooth tends to influence that child to stay away from the operating room. There is no need of this now we have plastic materials, and here is one of the greatest uses of plastics that I know of.

The extraction of the first permanent molar at an early age is a good thing in certain cases as spoken of. That we should reserve

space for bridge work I deprecate to a certain extent. I prefer to try to get the second molar over in some way or other in preference to leaving the space to be bridged in. Bridge work is all right in some cases, but I certainly would dislike to see a child growing up to age where bridge work should be put on and cutting off a good second molar and a good second bicuspid to put in a tooth in the place of the first molar.

The idea of educating children to go to the dental office themselves, or at least into the operating room, is one of the things an operator should strive for. It will instill into the minds of these little patients confidence and make them anxious to go to the office; but if you are gruff or rough you can easily drive them away.

DR. W. T. REEVES: Dr. Gallie's remarks reminded me of a method of practice in connection with the treatment of devitalized deciduous molars, or those that are dead, which I will give to you. It may be open to considerable criticism, but I have found it to be useful with myself, particularly in children all the way from eight to ten years of age, where we are not expecting that they will keep these teeth more than three or four years at the longest, and the tooth being broken down to the extent that it is almost impossible to treat it and fill the roots successfully. I remove all the decay in the cavities and open up the pulp chamber freely; then, taking a spear drill, I make a very small hole on the buccal surface at the margin of the gum right into the pulp chamber. Through this hole I pass wires up into the canals, and when they are well in place I then dry out the cavity thoroughly, put a little gutta-percha into the pulp chamber and fill it with amalgam. It is possible, within ten or fifteen minutes, to draw the wires out and trust to that giving ventilation, so that all gases escape in that way. I have succeeded by this method in keeping these teeth in comparative comfort and cleanliness to the patient.

DR. HUGO FRANZ: Dr. Reeves gave us one of the easiest treatments of abscessed deciduous teeth imaginable and, at the same time, to my mind with an operator of average ability, it is a most successful way of treating those teeth. Expert operators can do a great many things that the average operator cannot do; at the same time, we cannot all in our practice take the length of time for treating children's teeth that Dr. Peck has indicated. If we have parents of children who can afford to pay for this work, we can spend a great deal of time in caring for and treating them and we will be more

successful. We can treat the teeth as Dr. Peck suggests and can fill them with gutta-percha solidly, or we can treat those teeth that are badly absorbed with iodoform paste or any other plastic or soft material which has antiseptic properties and can retain them in that way in good condition. But where we cannot possibly spend that amount of time the treatment of abscessed teeth in this open way, as suggested by Dr. Gallie and Dr. Reeves, is one of the most successful methods that I have used in my practice. I vary a little bit in treating these molars or abscessed roots. Sometimes, even when I have the time, the patient is not willing to stand the tediousness of having wires passed into the root canals through the opening I make on the buccal side. In that event I clean the cavity, syringe the pulp chamber thoroughly, get rid of the putrid substance in the tooth and then take a pellet of cotton saturated slightly with nitrate of silver solution and place that in the cavity, with the cement over that. If I fill with amalgam I place the amalgam over the cement. Under those circumstances I use just enough cotton in the pulp chamber so that the root canals are all covered, and that extends over the little opening I drill from the buccal side. The opening on the buccal side should be drilled just as near to the gums as possible. I leave the cotton until the next sitting, working it out carefully through the opening. You get the cotton out and the inside of the root canal will not be subject to further decay from the putrid fluids that remain in the root canals. I never have had any irritation set up there by the use of nitrate of silver in the tissues, and it is easier than passing wires into the root canals.

Another point: In order to be successful with children's teeth it is necessary that we prepare the parents for the kind of work that the children are going to have. Parents, when they bring children to our offices, have a vague idea of what can be done for them. The first thing I impress upon any parent who brings a child to my office is that I cannot do for the little patient in the same successful way as I can do for an adult. It is simply impossible. It is very essential that the parent should know it, because we will have to refill in very many cases. There are only a few instances where we are absolutely sure of nonrecurrence of decay in proximal cavities in children's teeth. That danger is always present on account of mechanical difficulties, and we have to consider the tissues we are working on as well as the constitution of the patient. We should tell the parents that they should come to the office at least every two

or three months to have the teeth of their children examined. Tell them at the start that we can do but temporary work at best, and if we do more permanent work than they had expected so much the better for us.

The extraction of the first permanent molar in case of death of the pulp, I think, is one of the most difficult questions to decide at times. It is undoubtedly true what Dr. Peck claims, that if the pulp of a tooth dies at an early age, where the roots are not fully developed and will not be for two or three years, it is always a very precarious condition. Under those circumstances I am always inclined toward extraction with a certain expectation that sometimes I will have made a mistake, or, at least, things will not go as I expected. We cannot always figure on moving the second molar forward. But then, if we consider, on the other hand, that in treating such a root we create a weak point in the arch anyway, I do not know which decision is the better in that case. It is bad one way, and in many cases it is just as bad the other way. So, if we sometimes have doubt whether to extract or preserve, if we had a little more courage in many cases and resort to extraction, we would do much better in the long run.

As to the question of bilateral extraction, I think it is always well to do that, and sometimes it is well to go further. Sometimes it is well to take all four, especially if the teeth are weak. There has been a great deal written of late on this subject, and it is fortunate, because preventive extraction is a subject that has been handled for a number of years in a careless way, and if I should advise extraction under certain circumstances I should not want to have anybody go to work carelessly at it. I would take impressions of the teeth in that mouth and study the bite. If we have, for instance, a very low, close bite, we can always figure that the second molars are not going to move forward; that usually the bicuspid will begin to move backward. According to my observations, we have a much better chance for moving the second molars forward, taking the space of the first molars, when there is a higher bite of the longer teeth.

DR. J. N. CROUSE: I thought the practice of filling a tooth and then drilling a vent hole on the buccal side was abandoned long ago, and I am sorry to hear so intelligent a man as Dr. Reeves advocate such a method nowadays, because there is no use for it. If a dentist

cannot fill the root canals of children's teeth successfully with oxychlorid of zinc or some cement he cannot do anything well.

With regard to children having a dread of dental work, I would rather let a child come to the office every few days for six months without doing anything for it than to have it forced or scared into submitting to the operation. I frequently have children visit me several times, and even get in the chair a few times, before I finally do anything for them. If their mothers can control them it helps matters materially, and it is best to let them assume the management, but where the mother cannot control the child, as frequently happens, I send her out of the room, as in that case I can handle the child better alone. The main point is to gain the child's confidence and to keep it by never lying to him. If the work is going to hurt tell him so, but encourage him to be a man and stand it. Do not fall into the foolish error of telling a child that a certain operation will not hurt when you know it will, for after you once lose his confidence you will never regain it.

At the first examination, if there are any deposits around the necks of the teeth, I rub peroxid of hydrogen on them and show the children how nasty their teeth are, and this usually arouses them. I then give them a tooth brush and show them how to use it and with a little tutoring they soon get in the way of taking care of their teeth.

If we use good cement we can fill teeth of young children quickly and satisfactorily, and no great cavity preparation is necessary. Where the children or parents insist on it I do not hesitate to fill the front teeth with gold, as the fillings look well and are to be recommended from every standpoint.

With regard to the care of the molars, if the child has poor digestion I realize that there will be trouble in retaining those teeth, so I am in the habit of spacing on palatine surfaces, giving less chance for the accumulation of starchy matter.

The essayist recommends using a mixture of amalgam and cement. If any one has faith in that combination I wish he would put it in a glass of water and watch it for a week. It will go all to pieces, being even less reliable than a poor cement.

As regards the treatment of exposed pulps, it is the easiest thing in the world to get rid of an exposed pulp in a child's tooth. I seldom use arsenic, as carbolic acid or oxychlorid of zinc answers

the same purpose. Sometimes I leave the latter agent in until absorption takes place.

One of the simplest problems we have to meet is the treatment of alveolar abscess in deciduous teeth. My method is to fill the mouth with bibulous paper and then fill the pulp cavity with ninety-five per cent carbolic acid. By covering it with gutta-percha and gradually crowding the latter down the acid can be forced through the canals. Then alcohol should be applied immediately to neutralize the acid.

I can remember a time when many operators advocated extracting the first molar, whether it was indicated or not, but nowadays no one but a bungler ever makes this mistake. There are a very few conditions where it is permissible to extract the first molars, but the reasons must be very good before such a radical step is taken.

DR. DON M. GALLIE: As Dr. Crouse winked at me most of the time he was speaking, I feel justified in saying a little more on this subject. As I have previously remarked, I do not advocate rhizodontia in those cases where I can safely keep the teeth open and give the children comfort. If a child comes to me with a pulp exposed and there is reason to think that the tooth may not last very long, say inside of five years, and it requires removal, it is all right. If a tooth has gone so far that it is abscessed there is not much difficulty in deciding what to do. I do not believe in shirking our duty in regard to the care of children's teeth, but there are extreme cases of badly broken down teeth before the patients present themselves to us. If we think we cannot retain the second or first molar a reasonable length of time I do not see the necessity of torturing a child by filling it. I know Dr. Crouse has greater faith in oxychlorid of zinc and carbolic acid than he has in future happiness. But I cannot use oxychlorid of zinc with the same success that he does.

In extreme cases, where we know a tooth is not properly developed, where the roots are not more than two-thirds developed, that tooth is not going to last any great length of time, and the indications are we render the best service to that patient by removing such a tooth. If we can plaster a tooth over with oxyphosphate or oxychlorid of zinc and save it we can crown it, retaining both the arch and teeth in proper shape. But there are cases where the teeth are broken down and require that the pulps be devitalized before the child is six or eight years old. If you fill teeth at that time what

would be the result? If you can save the pulp until the child is twelve years old you can crown it afterward. It is the extreme cases I refer to.

The first time I heard the term rhizodontia used was in a paper read at a meeting held in Detroit. The word was used by Dr. Brown. The discussion was so hot that Dr. Brown only survived a short time after that meeting. So I never care to advocate rhizodontia after that discussion.

DR. HUGO FRANZ: Dr. Crouse related a personal story; I am going to give one. I was about nine years old when I was taken to a dentist, having had a severe spell of sickness, and after a careful examination they found three of my first molars were so far gone that the pulps were all dead, and one had a big cavity, but the tooth could be filled. The three other teeth with dead pulps were removed immediately and an appointment was made for me for a week afterward to have the right lower first molar filled. I went, and it was not an American dentist, but a woman who did the work for me. She was an excellent operator. I saw her the last time I was in Berlin. I remember very well the filling of that tooth now; it was decayed almost to the pulp and the tissues over the pulp were all more or less softened. I suppose she put oxychlorid of zinc or some cement over the bottom of the cavity after sterilizing it well, and then put some amalgam in the tooth. The spaces of those other three molars have disappeared from my mouth entirely. Upon examination you would hardly find any trace of them. The fourth lower molar I still have in my head. The first time I came to America I had a gold filling put in the tooth at the Chicago College of Dental Surgery, and, if I remember rightly, I was in the chair four hours, so that my nerves were pretty well used up, and now whenever I put in a large gold filling for any patient and I get tired out I can feel a drawing pain along the side in that tooth. Sometimes it is quite an annoyance to me.

There are two points which have to be considered. We should not say that this or that is the only way of treating these cases, because, so far as the preservation of the first permanent molar or the advisability of extracting it in desperate cases is concerned, with our present knowledge we are, at best, groping in the dark. In some cases it may be necessary to extract it; in others not.

One point occurred to me when Dr. Crouse got up which comes within the range of this paper. There was a question asked in the

last issue of the *Dental Digest* which somebody should answer. The question was asked, What shall we do with an upper incisor which has been fractured and there is an exposure of the pulp visible to the eye, but there has been no hemorrhage? The age of the child is stated and the root is not fully developed. The question is rather strange but since it has been asked I feel as if it needs an answer in some way. It seems to me we are not all clear in our minds as to what to do in such cases. The way to treat a tooth like that is to apply the rubber dam; secure the best antiseptic precautions; wash the teeth; sterilize the instruments, have the drills boiled, and then you may go to work and try to remove some of the dentine at the point of exposure. I have had cases of that kind come to me where, after two or three days, no inflammation was set up in the pulp. I do not know why it is, but I have had them. A child came to me only a month ago who had fallen from a swing. In those cases I use chloropercha to cap the pulp, and afterward fill the rest of it with cement. It may be possible to use gold, but I would not subject a child to any such strain. The idea is to save the pulp until the roots have fully developed, and the development of the roots will go on and sometimes the pulp will remain alive for many years.

DR. A. H. MURDOW: I must take issue with Dr. Crouse in regard to controlling children. I do not believe it is necessary for the father or mother to be present. If there is any need of control I believe in doing it myself. I will not say positively that there is not a child whom you cannot control without the assistance of the father or mother, but I question ever having such children to deal with. Occasionally, where we cannot control one of these little patients without punishment, it is better that it be done by the father or mother. However, if there is any punishing I prefer that it be done at home and send the patient back for me to operate.

DR. W. V-B.. AMES: There are two methods of handling the teeth of these young children which may be practiced with much satisfaction. Personally I have had a great deal of satisfaction from the use of an agent similar to nitrate of silver—that is, the chlorid of gold, and I think if any gentlemen who favor the use of nitrate of silver once try the chlorid of gold they will have no further use for the nitrate of silver. With teeth which present themselves whose pulps have become devitalized or which we must devitalize in some way, and we do not care for some reason to go to the trouble of filling the roots, I think, in consideration of the fact, as it appears to

me, that these roots do not always absorb as the permanent tooth approaches, that we should compensate for this lack of absorption by cutting away the crown of that tooth, grind it down on a level with the margin of the gum, which gives the oncoming permanent tooth a chance to press this tooth out of the tissues, and if in six months the child presents itself with the stump of that tooth again in occlusion, then grind away some more of it, and you will find in the course of time you have a mere shell on the surface. If those roots have been filled, well and good; if they have not been filled, you have a much better condition than if you attempt to fill the cavity and drill a lateral opening, which I think is a bad method. Very little has been said about the absorption of the roots of temporary teeth in which the pulps have been devitalized. There has been some controversy on that point. Some cases have been cited and have been seen in which the roots have and have not been absorbed, and I must say my experience is that more do not absorb away than become absorbed. So I merely compensate for this lack of absorption by grinding away the crown and allow the oncoming tooth to press the temporary one out of the jaw.

The best way to obtain the confidence of young patients is to refrain from punishing them, and especially during the first visit, as has been mentioned, and I must say, in cases where there is difficulty in connection with preparing the cavity, I get a good deal of satisfaction from resorting to such material as the nitrate of silver—i. e., using the chlorid of gold for the same purpose.

I do not know of any good reason why a combination of amalgam and cement should go to pieces when submerged in saliva or in a tumblerful of water, as has been intimated by one speaker. This combination does not, as many of you know, go to pieces in the cavities of teeth when reasonably good materials are used. There was *something* wrong in that tumbler.

DR. EDMUND NOYES: One word in regard to the absorption of roots. It relates, as I understand it, not primarily to the question whether the tooth is devitalized or not, but chiefly to the question whether the tissues about the apex of the root are healthy or in a physiological condition. If they are so, the roots of a devitalized tooth will be as regularly absorbed as the roots of a living tooth, and most of us have seen it take place in a great many instances. This furnishes an important reason why, in cases of devitalized deciduous teeth, if it is practicable to do so, we should make careful and thor-

ough root fillings, to the end that the peridental membrane and the tissues about it may remain in a physiological condition, and the proper and natural absorption of the roots may take place.

I want to say a word in regard to this fractured tooth that was mentioned for a child of seven years of age, and the same thing in regard to pulp exposures in first permanent molars before the complete development of the roots. It seems to me every possible effort should be made to preserve such pulps alive. If they die, after doing everything that can be done to preserve them alive it is not our fault. But do not, under any circumstances, be guilty of killing a pulp in any tooth before its roots have been fully formed. If it must die let it die of its own accord. Don't be responsible for its death.

DR. J. P. BUCKLEY: I shall occupy only a minute or two of your time, as it is getting so late and the subject has been very thoroughly discussed.

It brings to our minds quite forcibly the fact that one can furnish evidence to prove that the first permanent molar ought or ought not to be extracted. In the same way a good minister can take the Bible and argue that it is possibly right for a man to steal a horse. On the other hand, he could doubtless furnish equally abundant evidence that it was not right to steal a horse. We have good arguments for the extraction of first molars and equally good arguments that they should not be extracted, but retained in the mouth.

One argument in favor of extraction has not been mentioned. It is this: If the teeth are left in position, as a rule, the third molars are crowded and do not erupt fully and decay early, so that we will have sooner or later to extract the third molar. If the first molar is extracted early in life, prior to the tenth year, the second molar, as a rule, comes up and fills the place, leaving room for the third molar to erupt. It is a point in favor of the extraction of the first molars at an early age, providing, of course, their condition was such as would justify us in so doing.

Dr. Cattell raised the point of the possibility of tin causing discoloration of tooth structure. Tin, as we all know, is an oxidizable metal, and the oxide of tin is brown. In the discoloration of a tooth from a tin filling we do not have black sulphide or black oxide; it would doubtless be a sulphide, but the sulphide of tin is brown also. So it is possible to have a brownish-like discoloration produced by a tin filling. The discoloration would not be an objection in these

teeth, because we put tin in the posterior teeth and it seems to have a prophylactic action upon the tooth structure. Dr. Cattell wondered if it was possible to have a tooth discolored from a tin filling.

DR. GEORGE B. PERRY: I meant to have mentioned the fact brought out by Dr. Crouse in regard to the strenuous method which parents should exercise over the education of their children in the use of the toothbrush. That is one of the best means for the relief of diseased conditions and the retardation of their progress. I intended to have mentioned that point, but it escaped me.

DR. PECK (closing the discussion): I shall have but a few words to say, owing to the lateness of the hour. Dr. Perry spoke with reference to the early extraction of the first permanent molars, that is, where the pulps are destroyed previous to the eighth, ninth or tenth year. I believe that in the majority of cases where this is done the future usefulness of those teeth is very limited. That has been my experience and I believe it will hold good in the majority of cases. The statement was not positively made that all of them would be lost, but the majority of them. I believe it to be true.

Dr. Gallie referred to banding the second bicuspid and second molar in order to retain the space. I do not wish it to be understood that I advocate that for the purpose of inserting bridge work in after life after a child has advanced in age. I simply mentioned that method as possibly being worthy of consideration. That point was discussed by a number of men in the profession and myself something like ten years ago and nothing has been said regarding it, to my knowledge, since, and I mentioned it as an incidental matter as possibly being worthy of consideration sometimes.

THE THIRTY-SECOND ANNUAL MEETING OF THE WISCONSIN STATE DENTAL SOCIETY.

REPORTED BY R. C. BROPHY, M. D., D. D. S., CHICAGO.

The thirty-second annual meeting of the Wisconsin State Dental Society was held in the Pfister Hotel, Milwaukee, July 15, 16, 17, 1902. Roll call disclosed an attendance of about 150.

Formal opening of the meeting took place on the afternoon of the second day, though much preliminary work had been done and some clinics given prior to that time.

The opening address of President E. A. Gotterdam, of La Crosse, dealt largely with the accomplishments of the association

in raising the professional standard in the State, and suggested that there should be no relaxation in the fight against professional "freebooters" and quacks.

Dr. C. C. Chittenden, of Madison, Dr. E. C. French, of Eau Claire, Dr. Arthur Holbrook, of Milwaukee, and Dr. W. H. Chilson, of Appleton, spoke in discussion of the address, a line of sentiment being expressed that fear of quacks was a bugbear, that "the people liked to be fooled," that there would always be those who want cheap work, and that there will always be dentists who will do it; that the better way and only way to lessen the number of this class of practitioners is by education and moral suasion in bringing up the young dentist. The men who are doing unethical work to-day are likely to keep right on doing it, but we may prevent recruiting of their ranks by leading young men to know and appreciate the fact that they cannot be professional men in a true sense and conduct their practices without regard for the profession's code of ethics.

A paper entitled "High Fusing vs. Low Fusing Bodies," by Dr. W. T. Reeves, of Chicago, was first on the program, and in point of time consumed in the discussion which followed, it proved very lengthy, taking up nearly half the day, though the paper itself was not long. The essayist stated the object of his paper to be twofold: First to give added stimulus to those working porcelain by showing an ever increasing scope for the use of the material as a filling, and, to give some new principles that are fundamental in inlay work, which if studied and followed, will give increased success in the work; and secondly, to try to clear the atmosphere of the fog which has settled over the subject on account of a lack of uniformity of method among those prominently engaged in the work regarding materials and methods of manipulation. Dr. Reeves declared that there is a common ground upon which all informed on porcelain inlay work stand, regardless of questions of detail, and that is the availability and compatibility of porcelain as a filling material.

"I believe," said he, "that porcelain as a filling material is only limited in availability by the limitations of the operator's ability to perform any given case in hand. As an operator acquires skill in making and inserting porcelain fillings he will successfully advance from one class of cavities to others more difficult until he handles easily and successfully those that at first

seemed impossible; and as he overcomes one difficult case after another he will gain the confidence and skill that will enable him to restore the worst broken down teeth to full contour and usefulness with porcelain fillings."

Regarding prerequisites essential to success in inlay work, aside from knowledge of detail in manipulation, Dr. Reeves laid stress upon the necessity of "eternal vigilance." There can be no medium or indifferent work, no slighting or hurrying at any step, or failure will be the result.

Imperfect fitting of an inlay was pointed out as being a positive bar to success. Of the two things, imperfect adaptation of inlay to cavity, or indifferent matching of color, the former is by far the most to be deprecated, for good service may result in the latter case, while it cannot be expected where the fit is inaccurate.

Referring to a paper written by Dr. R. Ottolengui, and which appeared in the April number of *Items of Interest*, as being a representative and able argument of the low fusing side of the argument, the essayist first, in regard to the question of platinum or gold matrix, said, "his (Dr. Ottolengui's) great bugbear seems to be the burnishing of platinum into extensive cavities. I claim this for platinum: That wherever any one can burnish gold into a cavity to form a matrix, I can burnish platinum and will have as perfect, or a better matrix, and that there are a great many extensive compound cavities in which I can burnish platinum and make a perfect matrix; that if gold were used, even if they succeeded in removing the matrix from the cavity, it would be so frail that subsequent handling while baking the inlay would warp and bend it all out of shape, so that it would be absolutely no good as far as fit is concerned." The essayist contended that platinum could be burnished in any properly formed cavity, anywhere in the mouth, and that while, perhaps, it would require a little more time, when it was removed from the cavity no fear need be felt that it would change shape, a characteristic which, in his opinion, alone ought to give it precedence over gold.

The matter of comparative strength of high fusing body and low fusing body—the Jenkins body being particularly referred to, of the latter class, Dr. Reeves passed with the simple assertion that he regarded either porcelain strong enough.

Translucency the essayist said was one of the main features desired in inlay work, and he declared the Jenkins body to be

opaque to a degree that made it impossible to make a natural looking inlay of it. High fusing bodies, he contended, are translucent, and that by building the inlay in layers colors may be manipulated to produce effects impossible with opaque bodies.

The argument that high fusing body may be built up in any form, to restore lost contour, with assurance that that contour will not be lost in fusing, while in baking low fusing bodies the contour is invariably lost, necessitating, frequently, the grinding of the inlay after it is baked was forcibly presented by the essayist, and denunciation was expressed of using any body for inlays which calls for grinding of the inlay at its contact margins, or at least if they are ever so ground they should invariably be returned to the furnace for a reglazing; this for two reasons: First to insure perfect edges, and secondly, to give a smooth surface, nonretention to food deposits for better protection against caries of contiguous enamel. Reference was made by the essayist to a new theory of retention which clinical experience had convinced him had an important bearing upon the success of inlay work. This theory is that the physical law, the observance of which has heretofore been regarded as imperative in the preparation of cavities and insertion of fillings, of self-retention and interlocking, is, in the matter of inlay work, misapplied. The only demand is for an application of the law of cohesion, made possible by perfect adaptation and the use of the cement film crystallized under pressure.

Discussion of Dr. Reeves' paper was opened by Dr. W. H. Cudworth, of Milwaukee, and if any doubt had previously existed about the doctor's fighting ability it must have been dispelled soon after he took the floor.

The question of the superiority of the two classes of porcelain was rounded up promptly and for a few minutes Dr. Reeves' arguments were made to look like "thirty cents." This aspect changed somewhat, however, before the close of the discussion. Certain it is that Jenkins body has an energetic champion in Dr. Cudworth, and its interests are not likely to suffer when a discussion is on and he is present. It is hardly necessary to go further in a report of what the doctor said, than to make mention of the fact that he declared himself in opposition to the argument of the essayist in so far as it applied to the question of the advantages of the two classes of porcelain, "from start to finish."

Dr. H. L. Banzhaf, of Milwaukee, followed Dr. Cudworth and presented an argument which was more in accord with the paper, high fusing body receiving from him an able indorsement.

Dr. A. H. Peck, of Chicago, next took the floor, and excusing himself from discussing the direct questions at issue, made some very pointed and plain remarks about "absolute assertion," intimating that some times we may be wrong when we think we are right.

Dr. B. G. Maercklein, of Milwaukee, followed Dr. Peck, and argued that very much depended upon cavity preparation in inlay work, and advocated abrupt, parallel walls in opposition to essayist's recommendation.

Dr. E. C. French, of Eau Claire, Dr. G. V. I. Brown, of Milwaukee and Dr. Arthur Holbrook, of Milwaukee, all briefly discussed the paper, followed by Dr. Reeves in closing.

Dr. C. C. Chittenden, of Madison, next read a paper entitled "The Educational Outlook." This important question was considered very broadly and ably. Defects in our present system of education, in the essayist's opinion, were pointed out, and innovations looking to improvement suggested. The legal aspect of the question, which has had a very forceful bearing upon professional affairs in the State, was also considered.

The discussion of the paper was at times very animated, and disclosed some decidedly conflicting sentiments.

"Oral Surgery" was considered in a paper by Dr. G. V. I. Brown, of Milwaukee, and from an anatomical standpoint was particularly interesting, mechanical appliances being made use of as aids in demonstrating.

Following Dr. Brown's paper and closing the program in the matter of papers, was one by Dr. L. J. Stephan, of Milwaukee, entitled "Oral Hygiene in Our Public Schools." This important subject was covered very excellently by the essayist.

During the meeting a large number of interesting and instructive clinics were given, description of which is precluded by restriction of space.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

THE SIGNIFICANCE OF THE GELATINOUS FILM IN DENTAL CARIES.

At the recent meeting of the National Dental Association, in the discussion of one of the papers, the remark was made that Dr. Miller had proved that the formation of gelatinous films in the mouth had nothing to do with the carious process. This whole question of the phenomena of gelatinous plaques in the mouth is still in considerable confusion in the profession, as must of necessity be the case with any subject to which attention has so recently been directed, and it would seem desirable for the profession to study the matter carefully and dispassionately to learn the facts. That Dr. Miller ever made so positive a statement as has been attributed to him, to the effect that these films are in no way connected with decay of the teeth, we have not been able to gather from a very careful study of his article on this subject. It is true that he took the ground that the case had not yet been sufficiently proved that in order to have decay we must have the film, and also claimed to have found cases of decay with no film present. This latter, as he acknowledged, is not proof positive that the film was not a factor in the disease, because the film may have been present during the inception of the caries and have become displaced before an examination of the case was made.

But it seems to us that the question is not so much as to the possibility of having decay without the film as it is whether the film is not a prominent factor in the process of decay as we ordinarily find it occurring in the mouth. It is quite generally recognized that in order to have enamel penetrated as we see it, there must be a concentration of acid at one point of a much greater strength than can be found in the fluids of the mouth. In other words the saliva can never be so acid as to account for

the penetration of the enamel at given points. If it were so we should find the teeth decaying all over their exposed surfaces instead of in certain localities where we have learned to look for cavities.

Not only this, but if an acid of the very greatest strength were formed under such circumstances that the saliva had free access to it, the acid would immediately be diluted to such an extent as to be rendered comparatively harmless. In order to do its work as effectually as we see it in the mouth it must have some protection from the action of saliva flowing about the teeth. This is particularly true in the beginnings of decay on smooth surfaces of the enamel. After decay has started the cavity itself provides a harbored shelter in which the microorganisms can work, but in the inception there must be some agency to protect them and hold the acid in contact with the enamel without dilution.

As is well known, an uncemented band around a tooth will soon result in a girdling of the tooth with decay, the band acting as a means of protection to the microorganisms. This, then, is considered to be the significance of the gelatinous film in the process of decay—that it acts as a protection under which the microorganisms may work and produce their acid in immediate contact with the enamel.

There are many phenomena connected with caries of the teeth which the profession do not yet fully understand, and there are many cases of decay in which it would seem difficult to believe that the film was instrumental in their progress, but this is no argument that in very many other cases the film has not been an important factor, and that it does not explain certain phenomena connected with the beginnings of decay which otherwise we are not able to account for.

There is one patent fact connected with the entire subject—if the surface of enamel can be wiped clean by friction or kept clean by some normal solvent in the mouth which prevents the formation of glutinous material we will not have decay of the teeth in the manner we usually find it, and thus from present indications if we could dissolve this gelatinous film or prevent its formation we could to that extent inhibit dental caries.

THE EDITOR'S DESK.

THE DESK DESERTED.

I am writing this while far away from my own particular desk. I am out where the birds sing, and the wind rustles through the trees, and where the fish bite. I can look overhead in the evening and see the stars, and listen to the crickets and the whip-poor-wills. I do not have to think of an appointment at the office to-morrow morning, or of a certain abscessed tooth that is not doing well. I do not have to shave every morning and put on a stiff collar which saws my neck all day. I do not have to catch a car or listen to the clang of the cable. I do not have to dodge cabs or automobiles or women's parasols. I do not have to breathe smoke and soot and vile odors from restaurant basements. I can sleep as late as I wish in the morning or I can get up as early as I like. I am near to nature's heart, and nature is always kind to me, so I am in my true element. I am living these days, and not goading my poor body to the point of desperation to keep up with the frenzied gait of modern city life. I am not rasping my nerves against the jagged edge of a myriad urgent needs which make civilization almost an abomination.

In other words, I am on my vacation, and my best wish to all my readers is that they may have as pleasant a one as I am having.

BIOGRAPHICAL SKETCH.

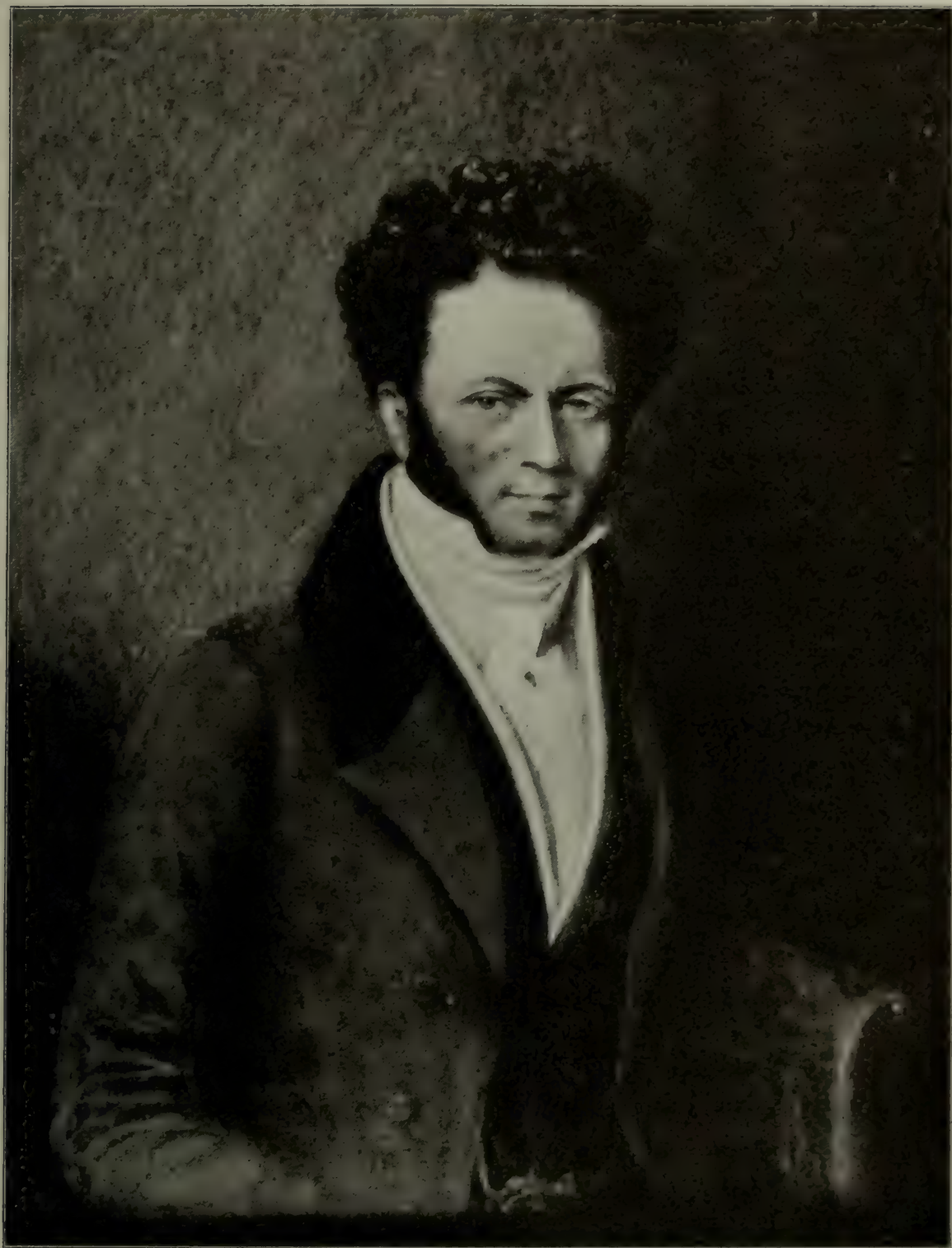
VI.

LEONARD KOECKER, M. D., D. D. S.—DENTIST AND AUTHOR.

BY BURTON LEE THORPE, D. D. S., ST. LOUIS, MO.

Leonard Koecker, a son of a Lutheran clergyman, was born 1785, at Bremen, Hanover, Germany. He received a common school education at the public school, and at the age of fifteen, he was placed by his father, in a mercantile house in his native city as an apprentice. Here he formed the acquaintance of a traveling Hebrew, who followed the calling of dentist and peddler, and who became interested in young Koecker and allowed him to familiarize himself with his instruments and watch his operations. He also furnished Koecker with a small outfit of operating instruments.

In 1807, at the age of twenty-two years, Koecker came to



LEONARD KOECKER, M. D., D. D. S.

America as a commercial agent, locating at Baltimore. This agency soon failed and he was left without employment and means of support. Being an accomplished musician, besides possessing rare tact and suavity of manner, he readily obtained access to the best society and made numerous friends. Making known his straightened circumstances to a friend, a Mr. Delaplaine, and informing him of the knowledge he had received from his Hebrew friend in Germany, he was advised by Mr. Delaplaine to begin the practice of dentistry at once and add to his knowledge as he could. Acting on this advice he opened an office and began practice in Baltimore, 1807, and practiced there a few years (1) soon to remove to Philadelphia, locating in that city about 1812. His first office was at 33 North Eighth Street and his last, 1822, on Walnut Street, between Seventh and Eighth, where the Philadelphia Saving Fund Building now stands.

His first patient was a gentleman who desired a tooth extracted. In describing this operation Dr. Eleazar Parmly (2) says: "He grasped the tooth with an instrument, shut his eyes and turning his head from the patient, made a strong effort, which dislodged the tooth from the socket, but under such excitement that he knew not whether the tooth was out or the jaw broken." The operation pleased the patient, who complimented Koecker on his skill (?), saying "he never before had a tooth extracted so easily." From this patient's influence his success began in Baltimore, his practice yielding him \$8,000 a year. He was possessed of much mechanical skill, making his own instruments as he needed them and supplying his professional confrères with patterns. He also annealed and beat his own gold.

From too close application to his business his health failed him after seven years' successful practice in Philadelphia. An acute attack of dyspepsia caused him to abandon his practice in 1822 and seek rest and health in a trip to Europe. After his arrival in London he decided to locate there, where he endured many difficulties before he finally succeeded in establishing a paying business that yielded him an income equal to his Philadelphia practice.

(1) American Journal Dental Science, second series, October, 1850, p. 108.

(2) American Journal Dental Science, second series, p. 471. Other reference in Harris Dental Dictionary, p. 638, and the American Journal Dental Science, second series, July, 1851, p. 471. James Robinson's Directories, Philadelphia.

Being an entire stranger in London, he carried with him letters, of both social and professional recommendation, from President James Monroe, John Quincy Adams and John C. Calhoun addressed to U. S. Minister Richard Rush at London; from Edward Ingersoll addressed to Washington Irving; from Thomas Sully, the portrait artist, and his intimate friend, addressed to Thomas Lawrence, President of the Royal Academy, and a certificate as to his skill and abilities from the celebrated Dr. Philip S. Physick. Through this he formed the acquaintance of Sir Astley Cooper, Mr. Laurence and Dr. David D. Davis, all distinguished in English medical and surgical circles, who extended to him a friendly and favorable reception and who did much toward his future success. He operated on a diseased palate successfully and supplied a substitute for a patient referred to him by Cooper and Laurence. The skill he demonstrated in handling this and other difficult cases materially advanced him in the confidence and esteem of these gentlemen.

His first literary production was a memoir on "The Devastation (or conjoined suppuration) of the Gums and Alveolar Processes," published in *Chapman's Journal* Philadelphia, about 1819. In London, 1826, he published his first book, "The Principles of Dental Surgery, exhibiting a new method of treating the diseases of the teeth and gums." This work was later republished by the American Society of Dental Surgeons, Baltimore, 1842. This was a complete work on dental science, pathology, and therapeutics, far in advance of anything heretofore published in the English language, containing many practical ideas. Koecker was the first English writer to describe correctly the principle upon which artificial teeth should be applied and constructed in his essay on "Artificial Teeth, Obturators, and Palates," published 1832. He also published, in 1834, "An Essay on the Diseases of the Jaws, etc." In 1827 he published a forty-page pamphlet entitled: "Reply to the additional strictures contained in the first number of the *Quarterly Medical Review* on the Principles of Dental Surgery, etc."

He recommended as a preventive of irregularity in secondary dentition "extracting some of the permanent set at an early period in order to give sufficient room for the rest, especially the first molars." He also remonstrated against the use of the mallet in filling teeth, and speaks of some operators employing "a hammer and punch to drive the metal into the cavity." He also deploras

the practice of leaving stumps of roots in the mouth, saying: "The only method of cure of all the idiopathic and symptomatic maladies, whether general or local, occasioned by dead roots or teeth, is their immediate extraction, they being always the principal and proximate exciting cause of the disease." He also advocated the use of the Physick forceps for the removal of the *dentes sapientiae*.

Koecker used plates of lead for capping pulps, contending this metal had a soothing and antiinflammatory effect on the pulp tissue. If the pulp was wounded he applied actual cautery, placing the cap over the eschar thus formed, and filling the cavity with gold. He opposed the use of wood pivots in inserting crowns, advocating only gold or platina.

He received the honorary degree of Doctor of Medicine from the Philadelphia and London Medical Colleges and the honorary degree of Doctor of Dental Surgery, February 18, 1842, from the Baltimore College of Dental Surgery. He was also a member of the Medical Society, the Linnaean Society, and the Academy of Natural Sciences of Philadelphia.

Koecker was studiously inclined and had an ambition to be scholarly. During his London residence he thoroughly mastered the English, French and Latin languages.

He retired after twenty-eight years' practice in London, selling the good will of his business for a large amount. It is stated he was possessed of expensive and extravagant habits and speculated in railroad stocks and lost ten hundred pounds at one time.

He married, 1817, Miss Maria Donath, daughter of Joseph Donath, a merchant of Philadelphia. To them two sons were born, Joseph Donath Koecker, an architect, and Leonard R. Koecker, M. D., who followed his father's profession until about ten years before his death, when he retired. This son was a lover of literature and art. He accumulated a valuable library of rare prints and fine editions, which was the nucleus of the famous Claghorn collection. He was also a worker in wood, paper and metal and exhibited his work, which contained rare specimens of his illustrating and book binding, at the Centennial exhibition at Philadelphia, 1876. He was also interested in clocks and had an extensive collection, many of his own construction.

As a child, Leonard Koecker, Sr., was noted for his gentleness and politeness of manner. Being of refined taste, a lover of music

and an individual of scholarly attainments, he was readily received by the best people, many of whom he numbered as his patients.

With comparatively no dental knowledge at the beginning of his professional career, by studious attention to details, tact and energy he built an excellent reputation as dentist and teacher, enjoying in the fullest respect the confidence of both the public and the profession.

Three months before his death he was seriously burned by his night gown catching fire; from which accident he never recovered. This injury, combined with dropsy and asthma, caused his death at the age of sixty-five. He was buried August 8, 1850, in Norwood Cemetery, about six miles from London.

The portrait which illustrates this sketch is from a miniature by Miss Newell, now in possession of the remaining members of his family at Philadelphia.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

MR. EDITOR :

Dental societies in New York are all apparently defunct just now. From June to September there is literally "nothin doin'." Those who can do so flee to the mountains or to Europe, those who cannot, stay here and enjoy "old ocean's" breezes as they are wafted from the battery every afternoon.

We were able, however, to break the monotony by attending the New Jersey State Dental Society which meets the third Wednesday of each July. This society is otherwise known as "The Hornets."

The thirty-second annual conclave occurred this year on the 16th, 17th and 18th of July at the Auditorium, on the Beach, at Asbury Park as usual. The Hotel Columbia was headquarters.

So large was the attendance, however, that no one hotel could accommodate the company in addition to their regular guests, so many other hotels nearby were crowded also.

The clinics and the exhibits are always the *great* features of this society, and this year they "Out-Heroded Herod" in number and in quality.

On the essay question, however, they were "shy." Of the entire five essays for the meeting only *one* was worthy of much comment.

Dr. J. Lenox Curtis, of New York, read a paper on "Electric Ozonation." He has been heard on this same subject several times during the past winter before other societies, and while much might be learned from a careful study of his method, it was not quite the thing for the New Jersey midsummer meeting.

"Ethnographic Odontography" was treated by Alton Howard Thompson, of Topeka—otherwise "Topeka Thompson." Well, if you know his handwriting, Mr. Editor, "Nuf sed." He did not appear and Dr. Stockton did the "honors."

Dr. R. Ottolengui on "Should Children's Teeth be Filled with Gold?" was listened to by a large and respectful audience. His paper was worthy of much consideration. Among those who discussed it Dr. James Truman was especially to be noticed.

When years ago the then "American Dental Association" met at Asbury Park following the regular meeting of the New Jersey Society, the meeting was held in the center of the *very large hall* of the auditorium, while the exhibits were arranged on all four sides. Dr. Truman editorially commented upon the deleterious effect of the "fringe of trade." It is to be noticed, however, that he continues coming to the meetings of the New Jersey Society, and that said society continues to flourish like unto the bay tree of fabled story.

When your readers are told that there were sixty separate exhibitors they will have some idea of what was done.

In addition the Committee on Art and Invention had a large number of devices marked plainly and shown in one case.

The clinics numbered thirty-seven, and never has your correspondent seen men more eager in their work, nor more successful in showing their various methods.

The administration under the able leadership of the president, Dr. William Lafayette Fish, of Newark, determined to make this meeting a great success, and they certainly succeeded.

The president's address was much longer than is usual. Dr. Fish was in close touch with all portions of his State, and realized fully its needs. Of necessity his address was mainly local. As a member of the national guard he had something to say concerning a dental corps in the navy. He spoke of Dr. Donnally's

work in this direction, and called attention to the necessity of securing the support of the entire Jersey delegation in the senate and house for the ultimate passage of the bill.

He also called attention to the need of oral surgeons who could be relied upon. In the discussion which followed Drs. Stockton, Osmun and Luckey took part, commending the address in every particular.

Among other things Dr. Stockton said: "J. Pierpont Morgan is waiting to go into partnership with the man or men who can put a cement filling in a tooth that will remain."

Query: What has Dr. Stockton up his sleeve?

Let Dr. Crouse take warning!

One of the exhibiting companies presented the society at the close of the president's address with a gavel made of ebony.

Dr. Thompson's paper read in the evening, especially urged dentists in all parts of the world to make observations on the native races at their doors and secure as much data as possible toward the study of comparative dental anatomy between the different races of mankind.

Dr. Ottolengui, editor of the *Items of Interest*, in his paper especially advocated the use of gold in the teeth of children who have the so-called "soft teeth." Dr. Stockton objected to some of the teachings of the paper as did Dr. John I. Hart and some others on the ground that it was practically a physical impossibility to properly and successfully fill these teeth. Dr. R. M. Sanger maintains that a good amalgam filling is better than a bad gold filling.

Dr. Truman, of the *Independent Practitioner*, took issue with Dr. Ottolengui on several grounds. On summing up by the essayist, however, it was plainly observed that there was not much difference between the two gentlemen.

Dr. M. L. Rhein, supported Dr. Ottolengui in the main. The list of clinics was so large that it was simply impossible to do justice to them all.

Around some of the chairs the crowd was so great that it was difficult to see what was being done and we can only call attention to a few. S. Leslie LeCron, D. D. S., of Baltimore, showed his quick and artistic method of using flat back bicuspid and molars in bridge work.

Your "own" W. V-B. Ames exploited his oxyphosphates as only he can do it.

Dr. F. A. Peeso, of Philadelphia, who is perhaps as expert a crown and bridge worker as there is in the "city of brotherly love," showed a method of replacing anterior teeth.

Dr. E. A. Bryant, of Washington, D. C., demonstrated his method of replacing facings for crowns and bridges and his clasp system for removable bridges.

Dr. M. L. Rhein, of New York, demonstrated on a patient the use of a tube and apparatus for irrigation in cases of antral empyema.

A novel method of replacing a facing on a bridge without removal was demonstrated by Dr. P. B. M. McCullough, of Philadelphia.

The report of the Examining Board was *very* interesting. In October, 1901, there were fifteen candidates, only three of them passing. At this meeting—July—there were thirty-nine new candidates, with those who failed before, making fifty-one who came up this time. The board was not ready to report on the number passing.

On the last day's session occurred the usual election of officers, with this result:

President, Dr. F. S. Hindle, New Brunswick; vice-president, Dr. Herbert S. Sutphen, Newark; secretary, Dr. Charles A. Meeker, Newark; treasurer, Dr. Henry A. Hull, New Brunswick. Executive committee: Drs. Alphonso Irwin, Camden, W. G. Chase, Princeton, F. E. Riley, Newark, W. W. Hawke, Flemington. Membership committee: Drs. Jos. E. Duffield, Camden, T. S. Dunning, Paterson, T. H. Dawes, Somerville, Charles H. Dilts, Trenton.

Dr. B. F. Luckey, of Paterson, was elected to fill the vacancy on the State Board of Examination and Registration caused by the expiration of the term of Dr. G. E. Adams.

A surprise was sprung after the adjournment, when the retiring president and the new incumbent were presented with gifts from the exhibitors, of whom there were sixty-eight this year.

Dr. C. E. Johnson, representative of the Charles H. Phillips Chemical Company, presented Dr. Fish, the retiring president, with a dress watch fob, with a gold heart pendent. Dr. Fish made a suitable response.

George Morgan, of the S. S. White Dental Company, presented Dr. Hindle, the new president and chairman of the exhibit committee, with a diamond shirt stud.

It may not be amiss to note that the society has the comfortable sum of over \$600 to its credit in its treasury, due to the watchfulness of its long-time treasurer, Dr. Henry A. Hull. Last year about twenty new members were admitted. This year something like thirty-six were elected. Verily the society thrives.

Sincerely yours,

"THE BOROUGHs."

FOREIGN CORRESPONDENCE.

BERLIN, W., May 30, 1902.

Königgrätzer-Str. 140.

THE EDITOR DENTAL REVIEW,

Chicago, Ill.

Dear Sir:—Allow me the privilege of protesting against the remodification of Dr. McBride's paper on "Jumping the Bite," (DENTAL REVIEW, September, 1901) since the meeting at Cologne, as thereby matter is incorporated in the report which was not presented at that meeting.

The essayist ridicules my knowledge of anatomy when I say and still maintain, that the condyle must first be depressed before being moved forward on to the articular eminence, whereby this very movement precludes the possibility of anteriorly enlarging the glenoid cavity. Could a forward pressure be maintained all the time without this downward movement, then, and only then, could we expect an anterior enlargement of the glenoid cavity to take place, and if it is an absorption, why not the *head of the condyle* just as much as the *circumference of the glenoid cavity*? He says that in his paper there is no mention of the condyle being depressed. Extract of paper, page 847: "*In closing the jaw the incisors antagonizing with the incline slide forward and upward to normal occlusion, while the condyle moves DOWNWARD AND FORWARD on the articular eminence; and when the jaw is opened exactly the reverse excursion is made.*"

Now with the movement thus described, why should we have an enlargement anteriorly of the glenoid cavity? I think my conception of the anatomy of the parts under discussion, is clearer than the essayist.

Dr. McBride does not agree with me that his application of quotation from Tomes is misapplied.

Extract of paper, page 848:

"These observations are indirectly corroborated by the statement of Mr. Tomes, that 'the form of the glenoid cavity bears an intimate relation to the dentition of the animal, and the nature and extent of the movements of the jaws.'" As I said in my discussion, the form of the glenoid cavity naturally bears an intimate relation to the dentition of the animal and the nature and movements of the jaws. And we invariably find that form maintained in all animals with occasional exceptions. But the occasional exceptions are not what we are considering. *They would undoubtedly be prenatal.*

In regard to the adverse criticism, I was referring to the skulls that Dr. McBride spoke of as having found in the museum at Dresden, and the case of the man thirty years old, and the boy mentioned in Case 4, in which he uses these cases to illustrate "jumping the bite," so I understood.

I had confined my discussion entirely to that phase of his paper. I used the term "correct occlusion" not "masticating," as a perfect masticating one would be the nearest thing nature could supply to a correct one, and stated that if these cases had been supplied with an appliance whereby the forward position could have been maintained until an unconsciousness had been acquired, applied early enough and worn long enough, the desired result would in all probability have been obtained. And I see no reason to modify this statement now.

Dr. McBride in his discussion says on page 915. *"I do not know where Dr. York got the preposterous idea that the bar of the appliance shown in Figs. 8 and 9 must be longer than the greatest extent the patient can open the mouth, when the illustration he possessed represented the exact length of the bar."*

I would say that I got the preposterous idea from reading the following extract from his paper. Extract page 853:

"The method is based on the principle that there must be an obstruction, operating continuously, during the ordinary opening and closing excursions of the lower jaw in order to prevent the condyles from taking a more posterior position in the glenoid cavities."

In Fig. 8 the spur of the appliance is considerably longer than the crown of the tooth that it antagonizes with, yet when the mouth would be opened in the ordinary movements of mastication the spur would not be continuously operating, hence my con-

clusion that the author wished to convey the idea that the obstruction, e. g., spur, must under all conditions be acting continuously. Again I say and most emphatically, that Dr. McBride cannot state the character or even the location of the physiological change that he says takes place a few weeks after the adjustment of the appliance, for he himself says that it takes place *somewhere*. Yet he says and expects others to accept the following; that by making the patient open the mouth beyond the influence of the jump bite bar, and pushing the lower jaw backward until the spur came in contact with the occlusal surface of the lower teeth, that the condyles would be able to rest in their most posterior position in the glenoid cavity. It, however, seems to me that they would hardly be in the glenoid cavity at all, but in the position that the essayist speaks of earlier in his paper. However, for argument we will say that they do occupy their most posterior position in the glenoid cavity; does that enlighten us to the nature of the physiological change that has taken place, e. g., whether it be absorption of tissue, formation of new tissue, distention of the ligaments, or merely muscular accommodation?

In reference to the Snow face bow, I stated in my discussion that if it gave the location of the head of the condyle at the beginning of the operation why not at any future stage? It seemed to me then and does so still that this would be the best way to determine the exact position occupied by the condyle at any stage of the operation, but not the nature of the physiological change. When the paper was presented it read physiological changes, the "*nature*" has since been added.

Dr. McBride says knowing the position of the condyle before, at the beginning, and after the operation, enables him to determine the nature of the physiological changes, yet with all his supposed knowledge he hedges himself in with the statement that this physiological change has taken place *somewhere*. If Dr. McBride would read my discussion carefully he would find that I said that the jaw is maintained in a forward position unconsciously, therefore there would not be any muscular energy necessary, the miraculous muscular energy that Dr. McBride speaks of must be confined entirely to himself as it is a product of his own imagination. I do not unqualifiedly state that any space left in the glenoid cavity would be filled in, but rather would in all probability be filled in with fibrous tissue, not osseous. (The

word osseous has been left out of the paper that was presented at Cologne.) I am quite in sympathy with Dr. McBride that a change as he says takes place somewhere, but whether it is in the ligaments, muscles, or by the formation of new tissue, is merely a matter of supposition whatever the gifted essayist may say to the contrary.

NOTE.—Since the discussion took place a case has come under my notice in the regular course of practice. Master M., aged fourteen years. After the plane of occlusion had been corrected, etc., caps with spurs were fitted to the upper molars as already described. These were worn continuously for seven months, and pressure on the symphysis at any stage caused no pain in the glenoid cavity. At the expiration of the time already stated the caps with spurs were removed, the patient biting in the desired manner, yet strange to say the boy could at will throw the condyles back into their old position in the glenoid cavity, notwithstanding the nature of the physiological changes that had taken place there.

This case strengthens my previous position considerably, viz., that it is most likely ligamentary or muscular accommodation, not absorption or deposition of tissue.

Yours truly,

E. LAWLEY YORK.

REVIEWS AND ABSTRACTS.

THE CARE OF THE TEETH. By SAMUEL A. HOPKINS, M. D., D. D. S., Professor of Theory and Practice of Dentistry in Tuft's College Dental School. Published by D. Appleton & Company, New York. 1902. Cloth, pages 150.

This is a well written book, and one most refreshing to pick up after some of the previous attempts along this line. It is intended for mothers, for physicians and for dentists, and it has many useful suggestions for each. The subjects treated embody among others: History of dentistry, cause of decay, food, irregularities, other mouth disturbances, prevention of caries, brushing, mouth washes, toothache and the teeth of the poor, and anatomy.

Some of the treatment of the subjects might be considered too technical for the average mother, and yet the author has evidently sought to make everything clear and concise. It is a difficult problem to interest in one volume such a varied class of readers as Dr. Hopkins has written for, but this book is the most promising attempt yet presented.

MEMORANDA.

We learn that Dr. E. Parmly Brown, a prominent dentist of New York City, has applied to the managers of the St. Louis World's Fair for a concession to erect a floating tower some 2,000 feet high. The tower is to be supported by an immense balloon and to have a passenger elevator service. We wish him success in his undertaking.

NORTHERN INDIANA DENTAL SOCIETY.

The Northern Indiana Dental Society will hold its annual convention at South Bend, September 24 and 25. A good program will be provided and a large attendance anticipated. All are invited to come, also to participate in the meeting.

M. A. PAYNE, D. D. S., *Secretary*.

SOUTHWESTERN IOWA DENTAL ASSOCIATION.

The Southwestern Iowa Dental Association meets at Clarinda, Ia., October 14 and 15.

H. C. BARNHART,
President.

WILL J. MATHER,
Secretary.

FIRST DISTRICT DENTAL SOCIETY OF ILLINOIS.

The twentieth annual meeting of the First District Dental Society of Illinois will be held at Rock Island on September 23 and 24, 1902. Rates are being secured on the railroads and an interesting program is in progress. All are invited.

CLAUDE B. WARNER, *Sec'y*.

THE MEDICAL BOOK NEWS.

This is a new bi-monthly publication devoted to the literature of medicine and the allied sciences, containing lists of new books, reviews taken from prominent periodicals, news items and advertisements. It is published by the well-known firm of P. Blakiston's Son & Co., of Philadelphia. The first number is just out, and it is in every way up to the high standard of the publishers.

RECENT PATENTS OF INTEREST TO DENTISTS.

702,394. Rubber dam holder, Edmund N. Beall, St. Louis, Mo.

702,645. Dental impression cup, Wm. E. Griswold, Denver, Colo.

702,646. Dental tool, Wm. E. Griswold, Denver, Colo.

702,871. Securing device for dental bridge work. Wm. E. Griswold, Denver, Colo.

702,805. Dental appliance, Henry E. Lindas, Greatbend, Kan.

703,221. Fountain spittoon, Willis E. Allen, Baltimore, Md.

703,063. Dental bur, Frank F. Hawkins, Troy, N. Y.

703,720. Artificial denture, James E. Dunn, Chicago, Ill.

703,729. Dental mouth mirror, Julius Kupfer, Bamberg, Germany.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

MINNESOTA STATE DENTAL ASSOCIATION.

The next annual meeting of the Minnesota State Dental Association will be held in St. Paul, September 1, 2 and 3. Fair week. Reduced R. R. rates.

An intensely practical meeting, equivalent to a post-graduate course, has been arranged for by the officers in charge.

Special attention has been given to porcelain work and operative dentistry, and the meeting will be so replete with practical papers and demonstrations that no dentist in the city or country wishing to keep abreast of the times can afford to miss it.

Some of the best known men in our State and from abroad will appear on the program, which will be issued about August 15. Any one wishing to take part in the meeting will please address Dr. S. R. Holden or Dr. J. M. Walls, at their earliest convenience. If you do not receive a program write Dr. J. M. Walls, and one will be immediately forwarded.

EXECUTIVE COMMITTEE.

NATIONAL BOARD OF DENTAL EXAMINERS—NIAGARA FALLS, JULY 28, 29, 31, 1902.

Officers elected: President, Charles A. Meeker, Newark, N. J.; vice-president from the West, Burton Lee Thorpe, St. Louis, Mo.; vice-president from the East, J. A. Libbey, Pittsburg, Pa.; vice-president from the south, J. A. Hall, Collinsville, Ala.; secretary, Joseph P. Root, Kansas City, Kan. Committee on colleges: C. C. Chittenden, Madison, Wis., J. A. Hall, Collinsville, Ala., H. J. Burkhart, Batavia, New York. Committee on conference: G. E. Mitchell, Haverill, Mass., J. G. Reid, Chicago, Ill., J. A. Libbey, Pittsburg, Pa. Membership committee: W. M. Darwood, Omaha, Neb., P. J. Heffern, Pawtucket, R. I., J. E. Weirick, St. Paul, Minn. State advisory committee: William Jarvie, Brooklyn, N. Y., F. A. Shotwell, Rogersville, Tenn., H. J. Allen, Washington, D. C. Committee for promoting relations with foreign examiners: William Carr, New York City, G. W. Pelzer, Great Falls, Mont., H. W. Campbell, Suffolk, Va., R. H. Jones, Winston, D. C. Committee on contracts and accommodations: J. Allen Osmun, Newark, N. J.

CONCERNING THE CHEMISTRY OF TOOTH DISCOLORATION. BY HAROLD CLARK, D. D. S., AND HAROLD VAN DER LINDE, F. C. S.

In the DENTAL REVIEW of June 15, 1901, there appeared an article on the above subject by Dr. J. B. Buckley. The question possesses some intrinsic importance, and appeared likely to elicit some amount of discussion. As none was forthcoming, we went over the ground; and, after examining the evidence, published a short rejoinder, in which some of Dr. Buckley's assumptions were disputed. This paper appeared in the *Dominion Dental Journal*, of Toronto, February, 1902. In it we gave our own experimental data, as well as full ref-

erences to supporting evidence from the published work of such authorities as Vernon Harcourt, de Forcrand, Schunk and others.

Dr. Buckley has replied to us in the May number of the DENTAL REVIEW.

After revising our work, we see no reason for shifting our position in the least degree, and as the subject may interest many of your readers who have no opportunity of access to the *Dominion Dental Journal*, you would confer a favor on them and on us by allowing us hereby to announce that the editor of the *Journal* will send free copies (as long as they last) of the other side of the case to all who are sufficiently interested to apply for them. Address,

THE EDITOR,

Dominion Dental Journal,
Royal College of Dental Surgeons, Toronto, Ont.

That dentistry occasionally moves a patient to poetry, instead of profanity, is shown by the following lines recently sent to Dr. C. H. Goodrich, of St. Paul, Minn., by a lady patient. She entitles it "A True Story." The DENTAL REVIEW sends its compliments to the fair authoress, with the hope that her habit of being moved to poetry by having teeth filled may become prevalent among our patients:

His arm was round my shoulder laid,
He pressed my head against his breast;
I sighed, but not a word was said—
I heard his watch tick thro' his vest.

His fingers firm upon my cheek
Still at his will compelled my face;
I only felt, I could not speak,
Fast fettered in that close embrace.

Pain racked, sore tried, I vain would flee,
His voice my futile struggles stilled—
"Ah! Just a little patience—see?"
I rise—I smile—my front tooth's filled.

WANTED TO KNOW.

1. Why dentists use the so-called "short bite" teeth? Often in selecting teeth I pick up a handsome face tooth thinking it is just what I want, but upon turning it over I am disgusted to find that it is one of those abominations, the "short bite" tooth. Upon inquiry I am informed that some dentists use very many of them. In all my experience in full dentures I have yet to see the case where such teeth are needed, and on the other hand I find them very objectionable. They are entirely contrary to nature, and also interfere with the tongue by having such a thickening near the ends of the teeth. Will some one explain why they use them?

2. In *plate* teeth, both gum and plain, the pins are nowadays, almost always crosswise. On speaking of this at the depots I am informed it is because the dentists demand it. Will some one inform me why? It is very objectionable from the fact that it greatly weakens the teeth. Often a narrow thin tooth is thus made very fragile. Of course if dentists want them they must be fur-

nished, but that those who do not want them should be compelled to use them is wrong, and the makers should be made to see to it that a fair proportion of teeth should have the pins arranged the other way.

3. Why is it that the mass of dentists use, without protest, the bicuspid and molars that are so out of all proportion to the fronts in a majority of sets? Take the teeth of the oldest manufacturers for instance and with nearly 100 molds of upper rubber bicuspid and molars the greater part of the sets are sent out with narrow, thin teeth and with but little porcelain above the pins, even in long teeth. It would seem with all these years of experience better results could be secured. But so long as dentists use them without protest, the evil will not be remedied. Fortunately there are makes of teeth where this fault is largely remedied.

4. Why is it after all these years of experience, that the dentist fails to find certain shades of natural teeth, especially among the yellows? The fact is they are retrograding. Shades once made are no longer to be found, except in the newer makes of teeth.

5. Why is it in looking over an assortment of bicuspid and molars, in sets, the majority of them are light, often white, while the back teeth should *always* be darker than the fronts?

6. Why cannot sets be made with the cuspids, bicuspid and molars gradually darker than the incisors, like nature?

Will progressive dentists rise up *en masse* and demand a change?

L. P. HASKELL.

THE DENTAL REVIEW.

VOL. XVI.

CHICAGO, SEPTEMBER 15, 1902.

No. 9

ORIGINAL COMMUNICATIONS.

THE ARTISTIC TREATMENT OF ARTIFICIAL TEETH.*

BY W. MITCHELL, D. D. S., LONDON, ENGLAND.

As manufactured at the present time artificial teeth leave much to be desired from the standpoint of the artist. We have almost innumerable shapes and adaptations for the various requirements of bite and contour. Still the shapes or patterns are almost invariably those of an ideal or perfect tooth, and not at all approaching in appearance those we are called upon to match or replace. I am speaking now of plain teeth. The gum sections I will say but little about, as they, with their painfully accurate separations, incidental to the process of molding, are well nigh atrocious when considered from an artistic standpoint. Dr. Royce has shown us in his carefully prepared article the divergence of color in the natural teeth, thus demonstrating how poorly those responsible for the output of artificial teeth have done their work, either from carelessness, or inability to appreciate artistic harmony, or at mercenary behest. The fact is, teeth as made by the manufacturers are made to sell to dentists at a profit, and so long as they can insist upon dentists buying what they have for sale, so long will they produce what they already have the molds for, and in the colors and shades which their employes have become automatons in producing. I know of one large firm who, after employing one of our best known ceramic artists for a considerable time, to prepare models and molds for the production of artistic work, very soon discontinued the manufacture of teeth from his models, as it did not pay them. This condition of affairs is distinctly wrong, as it argues, generally speaking, very strongly as to the indifference there

*Read before the Chicago Dental Society.

must be in our profession in respect to art and harmony. A parallel condition also exists on the part of the majority of our patients, many of whom, if they were allowed to have their own way, would appear more hideous with their artificial substitutes than they now do. Most women care but little for type, art or harmony, and only feel happy when the teeth supplied to them are small, white and evenly arranged, a combination, which in most instances, is more conducive to nightmare in the observer than of credit to the skill of the practitioner who produced them. Such work can only promote a painful solicitude for the deluded intellect so easily gratified by these miserable travesties upon nature. There should be a sufficient number in our profession willing to pay the price, and a good price, too, for the very best obtainable in the way of artistic and harmonious appearing substitutes for the natural organs, to justify the manufacturers in producing them. Appreciating the difficulties of the situation and with the desire to more nearly approach the appearance of the natural teeth when making a crown or a partial plate for my patients, I carried on a series of experiments in the production of vitreous enamels, with the view of matching the natural teeth as to etched surfaces, stains, erosions or localized opacities. I found it rather a tedious process for the limited time I had at my disposal. I then tried the application of enamel paints. These worked very well in some cases, for instance, on an all porcelain crown the effect produced left little to be desired, but where the tooth required heating for soldering or vulcanizing the results at first were unsatisfactory. In soldering, the heat required, in conjunction with the oxidation of the solder caused the color to change to such an extent that the tooth was scarcely recognizable; this trouble was remediable to a certain extent by previous allowance being made for this change of color, and the subsequent application of felt wheel and pumice. When subjected to vulcanization, the color was simply startling in its intensity, which was always inclined to blackness, caused no doubt by the sulphuretted hydrogen given off from the rubber; but this discoloration was fairly amenable to the felt wheel and pumice. After some considerable experience along the foregoing lines I was able to obtain a series of colors from the Dental Manufacturing Co. of London. These are put up in a very convenient form, in nine colors, ranging from white to black, so that by careful manipulation and experimentation, almost any shade desired

can be produced. A bottle of fluid is put up with these and is recommended to be used in the application of the colors. This fluid I believe is a preparation of glycerine, gum arabic and water. I have found that any *aqueous* menstruum is *not* the best thing to use, the reason why I will hereafter explain.

Messrs. Ash & Sons soon put a series of colors upon the market very like those previously mentioned. These I have also used. I secured some colors from a German firm, with which I have done a little work of a fairly satisfactory nature. These colors or enamels, as you are no doubt aware, are prepared principally from the oxides of different metals combined with frit and flux to promote their adhesion to and glazing upon the surface to which they are applied. It is upon the combination of this frit and flux that the high or low fusing of the enamels depend, and incidentally the results. Generally speaking, the darker colors can and should have a higher fusing point, whereas the lighter or fancy colors are more or less fugitive, and likely to burn out at a heat which would only develop the darker shades to their greatest perfection. The best way for the busy man is to buy all those already on the market, experiment with them, and learn their individual and combined possibilities, then should anything better present itself, buy that, too, and thereby have on hand an equipment ready for any case that may present itself. The outlay will not be much and will amply repay the conscientious practitioner in satisfaction the first successful operation he performs. My method of procedure with these enamels is as follows: After you have ground the tooth or teeth to the required shape, quite regardless of the destruction of the vitrified surface, decide upon the color, whether a plain or combined one, place sufficient of the dry powder upon a suitable slab, add a few drops of oil of cloves, or oil of cajuput, the latter preferred, as it dries quicker and seems to work more satisfactorily than any other menstruum with which I am acquainted. Then with, preferably, a bone spatula, grind the powder quite fine and thoroughly incorporate it with the menstruum, and apply the fluid result with a small sable or camel hair brush, locally or diffused upon the surface of the tooth, according to the requirements of the case. If any doubt exists as to the color it is better to give the tooth two or three coats and firings than to attempt to do the complete operation at once. This may be done only when experience permits. In comparing water as a menstruum with the essential oils men-

tioned, I have found that water dries too quickly, and therefore to a certain extent becomes misleading when considering the proper color the tooth shall be when completed, whereas the oily product approximately represents the finished tooth and assists the spreading and shading of the pigment in a manner impossible with anything else. Glycerine occupies a midway place in this respect. I find a small, fine-bristled brush, cut square on the end and used as a stippler, blends the colors over the surface of the tooth much better than can be done by simply painting it on. Although the latter is the quicker process, the stippling should always supplement the painting. A small pair of pliers to hold the tooth by the pins is quite necessary in this work, as handling by the fingers is to be avoided unless much experience is desired by the artist. After painting the firing process is the same as for inlay and kindred work, the heat being raised as quickly as the safety of the tooth will permit. This process should be watched carefully. At first the tooth will appear opaque and very dark, whatever the color used, but this will change as the heat is raised. This must progress until the tooth slide and Kaolin bed—if that is used, which is not always necessary—are of the same color, when the heat is dropped at once. The tooth or teeth may be safely taken out of the furnace at a dull red heat, if not subjected to draughts, otherwise it is well to let them cool until comfortable to be handled. Care must be exercised not to raise the heat too high, especially with the lighter colors, for the reason already stated. Should the desired shade not be attained the first time, any number of coats may be applied until success is attained. The specimens which I submit for your inspection show some of the effects produced by the process I have as briefly as possible described to you. Most of them tell their own story. One I wish to call your special attention to represents one of those cases we are sometimes called upon to match as a crown. I had never been able to succeed in doing this until I devised the following method: Take, for example, an anemic patient, not well nourished, gray eyes, reddish hair, type of tooth, bluish gray, points of incisors notched with enamel plates of a translucent bluish gray; a type of tooth impossible to match as manufactured. Even a near approach to it would be ruined if a backing was soldered to it, and an ordinary body baked upon it is but little removed from the opacity-producing backing. I proceed to deal with the case as follows: Select the nearest shade possible. With a diamond

disk grind off the back part of the point of the tooth a little further toward the pins than the desired depth of the translucency required, and toward the face of the tooth until practically the enamel only is left, which will then be transparent. Wash off all wheel dust, then take some black enamel and paint vertically on the back of the tooth, usually at two points, corresponding with the notches usually found upon the incisal edge, where the greatest translucency is desired. Fuse and when cool take a *white*, high fusing body and restore the back of the tooth. This will produce an effect unattainable by any other method with which I am acquainted, for successfully contending with these exceptionally difficult cases.

The infinite scope of this class of work in the hands of the earnest members of our profession, those whose sole desire is to do the very best possible for their patients, will afford them an opportunity of gratifying their artistic tastes and ability in a way that will prove of no little interest to them as well as being highly remunerative.

SOME PHASES OF ORAL HYGIENE.*

BY L. H. ARNOLD, D. D. S., CHICAGO, ILL.

Old age, white, bent and wise, often quotes the saying, "People who live in glass houses should not throw stones." So before we lecture our patients let us look to ourselves as dentists. Not exactly ourselves, either, but our counterpart—the other fellow. This fellow's mouth is not clean. You all know him, always turn your head away when he speaks to you. "His example," you say, "would certainly go far to discredit all he might say to his patients regarding benefits arising from oral cleanliness." Certainly an intelligent patient will not sit and hear his advice, all the time inhaling those awful odors and not think that if the dentist believed what he said he would cleanse his own mouth. How can he expect to be believed when his example is so at variance with his precept? Perhaps he apologizes for his condition, as I once heard a college professor apologize for a particularly well polished and highly colored nose, by saying, solemnly, "I have a *very* bad stomach." Now that is a prevalent way of excusing oral indecency—to lay it to the stomach. In point of truth, however, there is never a constant exhalation directly from the stomach. Odors come from that organ *only*

*Read before the Chicago Dental Society.

during the act of raising gas or other substances, and at no other time. Catarrhal conditions of the respiratory tract and some drugs produce certain odors in the breath, but to those I do not refer. Oral odors in general are, I believe, all from remnant accumulations in the oral cavity, pus, and allied refuse.

The human mouth from the time the first wail issues, to the last struggling gasp is a constant hot-bed of the most favorable kind, for the putrefactive process, and consequently in constant need of at *least decent* cleansing.

Regarding the care of the child's mouth I would refer you to an intelligent article in the July, 1901, *Digest*, by Dr. Kirk, I think, entitled "Management of the Infant Mouth," in which he says, "This cycle of changes (putrefactive changes he is speaking of) is set up in the residuum of milk remaining on the oral mucous after the *first feeding*," and he very lucidly traces a long train of evils and diseases dependent upon neglect to properly clean the baby's mouth; evils resulting in malformed teeth, stunted body and even in death itself. And the deciduous teeth, whose fault is it that they go so often long before their time? The parent's or guardian's, of course, but too often that scapegoat brother dentist whose mouth we examined a moment ago has a good deal to do with it also.

Does he not often find it quicker to extract an aching tooth for the crying, squirming, scared child than to explain the necessity for proper preservation of the tooth to shedding time, and then to preserve it? And in such cases *he* is vastly more to blame for the mutilation of the child than the guardian for requesting it, for it is the dentist's duty to teach while he works, teach patiently, over and over again, day after day, year after year, repeating the truth and rooting out, to the best of his ability, all fallacy regarding the oral cavity, and by his own personal example showing the truth that is in his words. He must keep his own teeth and mouth *extravagantly* clean that his patients may think, as they do think, "Of course, we cannot keep our teeth quite as clean as the dentist does," and yet, falling short of his example, they may still greatly improve the condition of their own mouths. He must teach (after having himself studied) the best manner of using a toothbrush, the best brush to use, the use and abuse of mouth antiseptics, the injuriousness of the vended tooth bleaches, the use of tooth powder and the requisites of an admissible powder.

Now, as to toothbrushes, nearly all are made from bristles taken from the wild hogs of Russia or China. The handles are common beef bones. They are made mostly in Japan, France, England and Germany, and by one firm in the United States. Probably English brushes are the best made and worst shaped. The French are next in quality, but far ahead in form. Germany and Japan are generally imitators. Some of the most expensive English and French, and all American brushes are made in factories under more or less sanitary conditions, but the cheaper grades, including all German and Japanese brushes, are made in the huts of the peasants, where cattle, swine, dogs, fowls and humans are herded in common. The bristles and bone are given out by the dealer and taken into the country, and there assembled by the aged and young children and diseased persons, the stronger members of the family working at more remunerative employment.

These cheap brushes are often made in the most unsanitary and wretched surroundings imaginable, and it is a significant fact that after being made they are seldom sterilized before using. The English brushes are generally very much too large to be efficient. The French are better shaped, but are apt to be too long of head, making much waste to the brush, and are too long of bristle. I know of no brush at present that is ideally shaped for oral cleansing, but I am trying to get a firm to put one on the market.

A wide brush is not advisable because it limits the movement possible longitudinally to the tooth. Long bristles are not best because they bend when the brush is thrust back between cheek and teeth and stay bent till the brush is withdrawn, thus missing the interproximal spaces so much in need of cleaning. Soft bristles become softer when wet and utterly fail to enter the spaces at all. If the surface of the bristles is concaved longitudinally to fit the labial curve of the teeth, then when the brush is reversed and used on the lingual surfaces, only the ends of the brush engage the teeth; hence, more teeth are missed than cleaned, and the user is deceived into thinking he has cleaned his teeth because he has brushed them.

Studying the brush over and what is required of it, it would seem that the brush best adapted to use in the human mouth should have a short, narrow head with short, rather stiff bristles, trimmed straight longitudinally and convex latitudinally, that each line of bristles may come successively into use as the brush is rotated. A

brush must be regarded as only a series of toothpicks, set in a handle for convenience. The bristles being quite limber act best when immediately re-enforced by other bristles, thus forcing the extreme points (which alone do any work) into the innermost recesses between the teeth. The handle should be straight, broad and flat, of the spatula type, to insure firm control and should be provided with some means of being readily hung or stood up to drain and dry.

Felt or cloth would seem a very poor cleanser for the interproximal spaces.

As to powder, I favor a mildly abrasive powder, flavored and sweetened to insure use. Mildly abrasive for the following reasons:

1st.—Some forms of dirt refuse to yield to the brush alone, but do yield readily to the brush and a mildly abrasive powder.

2d.—The presence of grit in the mouth is distasteful to most persons, and so will insure a most salutary rinsing which otherwise, in many cases, would not obtain.

3d.—A mildly abrasive powder will maintain the polish on fillings as well as teeth, thus prolonging the life of fillings.

4th.—Every particle of acid of any description which comes into contact with the teeth has a dissolving action on the enamel, leaving it soft, rough and in good condition for the sheltering of hosts of acid producing microorganisms. This softened portion with its hordes of destructive tenants can be polished off with a mildly abrasive powder, but not by a nonabrasive substance, thus making for preservation of the teeth.

These are four good reasons for using a mildly abrasive powder or paste. The objections to abrasives will undoubtedly be fully dwelt upon in the discussion. Our previously noticed remiss brother dentist has another habit which is vicious, that of prescribing this, that or the other tooth powder or paste as he happens to be taken with the representative of the manufacturers of that particular preparation. He should know better than to prescribe upon those grounds. I found one powder containing cream of tartar, and it was claimed, no doubt truthfully, that this powder was a wonderful tooth whitener. When I called the maker's attention to the injurious nature of the salt he sagely remarked that there "wasn't enough in it to *hurt* the teeth, only bleach 'em."

Safe powder for dental use seemingly should contain an extremely fine grit, sweetening and flavoring to make it acceptable,

a deodorant and perhaps an alkali and an antiseptic. *Perhaps* these two latter and only perhaps. Is an antiseptic or germicide indicated in the ordinary mouth? Occasionally, perhaps, it may do no harm, but as a regular part of the routine of frequent cleaning, both antiseptics and alkalis are open to some question. We know that stimulation of the oral nerves will vastly increase the quantity of saliva in normal mouths; also lack of stimulation will decrease the quantity.

If stimulation affects the quantity, why should not other stimuli reasonably be expected to affect the quality? In nature the necessity is generally the stimulus which starts the supply of the needed, whatever it be. Then the necessity for an alkaline constituent of the saliva would be an acid condition of the mouth, and for an antiseptic constituent would be the irritation of a colony of microbes. If, however, we supply these constituents (the alkaline and antiseptic), artificially, we destroy the stimulus which actuates the nerves, which in turn enforces idleness on the cells producing those constituents in the saliva.

Idleness means atrophy, and atrophy means chronic incapacity. Hence by the constant use of antiseptics and alkalis in the mouth we have destroyed the power of nature to provide a normal saliva, and necessitated a constant use of drugs. In other words we have formed a chronic drug habit. So we see how our remiss brother really injures his patients by prescribing that delightful tooth preservative, which is most popular just now. And when he accepts stock, gratis, in the commercial concern promoting and foistering the nostrum he vaunts to his patients and those who listen to him, he becomes a curse to the community, on a par with the advertising "parlors." If he would thoroughly curette and polish the teeth and teach the patient to keep the mucous membrane as well as the teeth clean he would do far better than to resort to the lax use of nostrums to save himself hard and disagreeable work. I suppose this matter of cleaning has been hashed and rehashed till, like the denizens of the boarding house, we are all sick and tired of the dish, and yet this careless fellow will *not* do his duty—even though in so doing he avails himself of the very best of good practice—the preservation of the teeth and gums as nature made them. Probably much in this direction can be accomplished by following the method of Dr. Hart, of California, but adding to his process the application of molten paraffin as a last dressing, the object being to

fill up any minute but enlarged interrodular spaces which may be present on the surface.

This treatment is, of course, always supplemental to thorough curetting and polishing of the teeth.

I want to emphasize the necessity for going over each tooth at the neck very carefully with scalers, even though there is no evidence of tartar to be seen anywhere. It is a constant matter of surprise to find a small, thin ring of calculus just below the edge of the free margin of the gum in mouths apparently perfectly free from this deposit. Indeed so insidious is this ring or partial ring that many times I have thought the gums were *perfectly* healthy, yet subsequently found that bit of calculus and upon its removal have been able to notice an improvement in the appearance of the already healthy looking gum. So frequently do I find this, especially in cases of pericementitis, that I have sometimes wondered if some of the gentlemen who so often find necrosed alveolar edges (which I have never seen to recognize) do not sometimes mistake this "necklace" for necrosis and removing it, note improvement. Sometimes even after thorough curetting and polishing, the gums having become chronic invalids from long irritation, refuse to adhere closely to the teeth and so collect refuse still. Many such cases are materially improved by careful brushing of the gums themselves systematically. Our food grains are now ground so fine and food-flesh grown so tender that the natural friction produced by grinding our food entirely with the teeth is no longer available, and therefore to supply the necessity we must resort to artificial friction.

To secure this friction as well as general cleanliness our much scolded friend should go over the method of stimulating and cleaning, brush in hand, with the patient till all parts of the oral mucosa are reached and particularly that important refuse collector, the dorsum of the tongue.

This should be scraped with a sharp edge and scoured clean, with soap if necessary, and as often as the refuse from the blood (failing of natural elimination and thrown out by way of the saliva), accumulates, be it daily or hourly. It is rather surprising that this dentist should see it his duty to clean the teeth, but *not* the tongue; that he should utterly fail to see the necessity for this matter when it is so very apparent that nature is using every possible avenue of elimination in her struggle to free the blood stream from pernicious substances; and good can be done also by brushing the inner surfaces of the cheeks as well.

The "blot on the profession," so vividly portrayed by the late Dr. Cushing, has not been removed by any means, though perhaps a little less glaring now than formerly, and until it is removed we are but oral mechanics, tooth tinkers, if you like, and not the noble body of men that we should be, to coin a term—oral prophylactors.

A KNOWLEDGE OF FACIOLOGY ESSENTIAL TO DENTAL PROSTHESISTS.*

By B. J. CIGRAND, B. S., M. S., D. D. S., CHICAGO, ILL.

There is an adage that has been handed down to us which says, "He who knows not other languages knows not his own." The truth of this is equally applicable to the trades and professions, and the practitioners of our calling are emphasizing the necessity of studying professions, which in basic purposes are correlated to dentistry. The study of fine art, sculpture and psychology are among the latest recommendations to the student curriculum, and practitioners will do well to observe the benefits which are derived from possessing a knowledge of these kindred vocations.

The profession in which we are engaged affords an opportunity for inquiry into the general dispositions of the people; for it is in the practice of our profession that we come in direct contact with all classes, conditions and races of humanity.

I am impelled to say in the beginning of my paper that it matters little how learned or proficient one may be in the general practice of the principles of dental science, if he be ignorant or regardless of the general character or idiosyncrasies of the patients for whom he operates, he most certainly will be a failure as a dentist.

In an article by Dr. J. N. Crouse this very important remark occurs, "Human nature, that subtle, indefinable, hard-to-understand something, which reveals itself constantly in various shapes—this human nature must be met, understood and controlled before a man can become a successful dentist in the full sense of the word. Every dentist finds all sorts of dispositions and temperaments to deal with, and all of these must be met and dealt with under the most trying circumstances." An eminent educator has said that "all education can be summed up as knowing yourself, knowing your fellow-man, and knowing how to adapt yourself to your fellow-man."

*Read before the Rockford Odontological Society, June, 1902.

A dentist should be a good judge of human nature and be able to control his various patients with their different peculiarities, and this requires more than an average intelligence. Much, however, can be acquired by practice and study of the subject. This important faculty is so closely related to the various qualifications of a dentist that its advantage can readily be seen.

A knowledge of human nature is indispensable to any person who makes a livelihood by direct contact with the public. The merchant, the lawyer, the theologian, the physician, the dentist, and the teacher require this talent or their service is soon dispensed with. The inventor, the scientist, or the investigator has no great need for a knowledge of human wants since the nature of his labors does not depend on the dispositions and opinions of the general public. The good which results from a knowledge of faceology can scarcely be defined.

Among the distinguished men who attribute their success to a knowledge of human nature, we find in theology Luther, Spurgeon and Beecher; in law, Choate, Webster and Lincoln; in medicine, Hypocrates, Agnew and Bell. In literature, Shakespeare, Goethe and Hugo. In finance, Sherman, Gage and Rothschild; in statesmanship, Jefferson, Monroe and McKinley; in trade and commerce, Stewart, Armour and Wanamaker; in war, Washington, Napoleon and Lee. Acknowledgments of this character must awaken in all desiring success an interest in the fascinating subject of faceology. It is claimed that President Lincoln seldom made an important appointment, no matter how well and influentially recommended, without asking a personal interview with the candidate. This afforded an opportunity of "gauging the caliber" of the prospective official.

That the strength, quality and disposition of the mind are evidenced by facial symbols there can be little doubt. Dr. Gray, whose anatomy has become a recognized text-book, wrote in his later years as follows: "A word as to the lines of the face as indicative of expression. Every one pays unconscious homage to the study of physiognomy. When scanning the features of a stranger he draws conclusions as to his intelligence, disposition and character. The muscles of the features are generally described as arising from the bony fabric of the face and are inserted into the nose, corners of the mouth and the lips. They drop fibers into the skin along their course, so that there is hardly a part of the face which has not little fibers to move it. The habitual recurrence of good or bad thoughts,

the indulgence in particular modes of life call into play corresponding sets of muscles, which by producing folds and wrinkles gives permanent cast to the features, and speaks a language which all can understand." The great German scholar and writer, Schiller, says: "It is an admirable proof of infinite wisdom, that what is noble and benevolent beautifies the human countenance; what is base and hateful imprints upon it a revolting expression." I might mention scores of others equally eminent, but I well know that there is not present here a practitioner who does not fully realize the importance of a practical knowledge of temperaments and facial outlines.

In dental prosthesis and oral surgery, the modern dentist must be in the full sense of the word a "facial sculptor," for to his tender care and consideration is left the molding of many a scowl or smile. He must appreciate the lines of beauty in expression and discern at a glance the changes necessary in the different physiognomies to make them charming and inviting, rather than repellant and false. It is in the practice of prosthesis that the study of the face is most essential, especially so, since "restoration" is its distinctive feature. But he needs a fair understanding of the principles of human character, aside from the purpose of restoring, for if he wishes to attain an agreeable result in any operation, he must also know whom he is working for.

The face is divine territory and should receive the closest consideration of all conscientious practitioners. The face is in truth the window of the brain, the avenue to the mind and the symbol of the character. The face is the servant of the emotions; it mirrors the feelings and gives expression to the impulses. The face is the visible record, the map of the heart proclaiming the character of the individual to all who can read. Upon it are reflected the atoms of individuality which make up the career of its owner. It is the herald which advertises the true composition of the man and tells in unmistakable language the traits, peculiarities and characteristics of the person wearing it. These symbols which we so closely trace on the face are not occult or secret, but are open and plain, so much so that even a child may know distinctly the heart of its possessor.

The changing expression of the face is universally regarded as giving response to the passing thought or emotion of the mind. Thus, if one be long afflicted by grief or blessed by joy; worried by trouble, or vexed with care; shadowed by melancholy or excited

by wit; inspired by faith, or led by delusions; inflated by pride, or subjected to shame, the emotions awakened by these different states reveal themselves in the face and become so fixed as to defy concealment. But let one's circumstances become suddenly reversed; let grief be converted into joy; let oppression be turned into liberty, and the lines of care and vexation will fade away and scarcely a trace will remain to tell the tale. In short, the sunshine and shadow of our lives are correspondingly engraven on the moldable face. And it is this ever and constant change of the face that demonstrates the two-sidedness of man's being. It proves beyond the shadow of a doubt that all men are subject to development or the reverse; it also clearly shows that all men, and I mean women, too, have a twofold or "dual character," the one being natural, the other acquired. This "dual character" is emphatically represented in histories, novels and plays. Be the acquired character what it will, the innate or created one is ever the power behind the throne. The Germans have a saying which is true to the test, namely, "What the gods have given you the winds will not blow away."

But it is the innate or natural dispositions of persons that we as dentists must most clearly acquaint ourselves with, since while engaged in our work we operate on nature's being, and any pain or discomfort which we inflict has an immediate response, a response so sudden that it is almost beyond the power of the patient to control. I do not wish to be understood as meaning that a keen knowledge of the acquired disposition is needless, for we must be well versed in both the innate as well as the acquired characters if we desire to accomplish successfully our task, and at the same time keep in good humor the acquired character of the patient. A safe rule to follow is this: "Keep on the dexter side of the innate character."

Now, having given a few general observations on the certainty and usefulness of an understanding of natures, I will endeavor to briefly tell what indices of character are revealed on the mouth and its environs, and let me assure you that the deductions which I herewith present have been evolved in a large measure from personal observation, guided by the safe rule of comparison. Much of what I know on the subject *must of necessity* come from reading and research, but the conclusions which I have drawn are uninfluenced by preëxisting theories; nor have I projected a theory and then gone forth to find material to prove it true, but I have made

it a point to collect all possible notes, observe closely and compare freely, before permitting myself to formulate a theory or conclusion.

Anatomists and physiologists differ widely as to the definition of the face. There are those who include the forehead as a part of the face, and there are others who claim that the face begins at the superciliary ridges and embraces the eyes, nose, cheeks, mouth and chin. I prefer the former definition, which holds that the forehead is included in the face. Dividing the face into three equal parts, we have in the lower third the lips, mouth, chin and greater portion of the cheeks and inferior maxilla.

LIPS AND MOUTH.

Dr. Oliver Wendell Holmes says: "All parts of the face doubtless have their fixed relations to each other and to the character of the person to whom the face belongs, but there is one feature which more than any other facial sign reveals the nature of the individual. This feature is the mouth, and the portion of it referred to is the corner. A circle of half an inch radius, having its center at the junction of the two lips, will include the chief focus of expression."

The Oriental people have a proverb which reads: "Show me a man's eyes and I will show you what he might have been and show me his mouth and I will tell you what he is." Artists have recognized long since that perfection in portraying lies in having the mouth accurately outlined and shaded, the slightest deviation from the original will magnify itself on the canvas. They realize that the index of individuality is more pronounced in the lips than in another attribute to the face.

The tongue may be silent, but the mouth and lips never cease to speak. They are ever translating to intelligent observers the inner life of the owner.

A long upper lip, when viewed laterally, indicates firmness, and when perfectly straight shows a tendency toward stubbornness. The saying, "he has a stiff upper lip" is very appropriate when it is intended to convey that the person is firm and unyielding. People possessing this kind of lip never surrender, and meet the assaults of adversity or the attacks of enemies as the rock meets the surging waves. A large number of generals have lips of this character, General Washington being prominent among them. When the lip curves in at the junction of the lips it is a mark of determination, and is usually seen in explorers and investigators, as seen in

Herbert Spencer. A short upper lip portrays a weak and wavering character. People with this symbol are constantly changing their minds and have hardly enough stability and fixedness of purpose to gain a livelihood. They are the "I can't" element in the race, or, as the French say, "He's like the weather."

When the upper lip is curved gracefully outward, it symbolizes ambition. These persons evince a good degree of self-respect and dignity. You find them preferring the place of a leader rather than that of a follower. They are seldom overbearing and are usually of a sunny disposition; they delight to be in society and enjoy a happy "social chat"; they have an agreeable and fascinating manner and an acceptable way of saying and doing things. Abraham Lincoln possessed this lip and was true to its significance.

A small mouth on a mature face indicates a childlike disposition. The baby lips or rose bud mouth does not convey to us strength of character, but reminds us of the follies of youth. The bow shaped or cupid mouth, which poets and painters of the past have rhapsodized over, belongs to the school of Venus, and in this age has lost its place as typifying anything other than sentimentalism, and lacks elements of stability.

An upper lip which is short and fails to cover the teeth and gums indicates approbateness. This lip is seen in people of a vain disposition; they are mortified by censure and greatly elated by words of commendation; they are too fond of praise and delight in being flattered; to blame them wounds their feelings beyond reason. People of this index are so sensitive to criticism that they shun public office or any great public trust. Imagine Cæsar or Napoleon with a short upper lip, half open mouth. Could you dream of Jefferson, Franklin or Lincoln with this gaping mouth? These lips no man had who served in the armies of Napoleon, for he made it a rule to promote no man who could not close his mouth.

The bloated lip, common to the dissipated individual, is only too frequently seen in our present civilization. Its drooping lower lip and depressed corners speaks a sad tale of selfish indulgence.

The sensually inclined person possesses stuck and puffy lips. The upper lip curling upward, the lower lip turning downward, and the corner of the mouth seems full and lifeless.

The lips of contempt or scorn are familiar to us all. Contempt protrudes the lower lip and draws down the corner of the mouth. People of this lip are naturally inclined to fault finding; they long

to provoke the ill-will of those about them; they delight in abridging the pleasure of their friends and have a cold, repulsive and antagonistic bearing. Andrew Johnson possessed many of these traits.

The thin and illy defined lip denotes a cold, unloving nature; industry, love of order and precision are there in unmistakable language. This class of people are unsocial and prefer to live to themselves; it bores them to have companionship with any one; they are given to seclusion; they form but few attachments and manifest but a sparing degree of affection for any person. They are the class of people who have no time for recreation and are incessantly employed. A lip of this character we see in the face of John Quincy Adams.

When the lips are full and well rounded it exhibits the fact that affectionate and most loving thoughts engage the mind. Mothers who love their children to such a degree as to approximate worship have invariably this lip. It is most common to the female sex. Warm-hearted sympathy is its potent language.

Though these lips signify that their possessor worships Cupid, they nevertheless are emblems of purity and are seldom seen on a vicious and crouching countenance. The model mouth of the Greek Venus is of this beautiful shape. James Monroe displays these lips and his tender love for those about him corroborates the silent voice of his mouth.

The mirthful lip is well proportioned; the middle line is equally serpentine on both sides of the center. This lip seems to be as the Germans say, "Limber and quick," and is usually accompanied by a glib tongue. Voltaire's lip is a familiar illustration.

CHIN AND JAW.

You have all recognized the great variety which exists in the forms and quality of the chin. It may be prominent or retreating; long or short; pointed or round; square or dimpled. Few attach any significance to the shape of the chin, supposing that its shape is merely accidental, but those of you who have given the matter serious thought will assert that the chin demonstrates characteristics and peculiarities. One of the marked differences between man and beast is the fact that the man has a chin while the animal presents no such development. We have all noticed that a chinless person is weak minded and bordering on idiocy or imbecility; this is certainly strange, yet nature's symbol must bow down to nature's command.

The prominent chin always depicts a positive character and can be seen on persons noted for resolution, perseverance and executiveness. These people are prone to control and to command others and to make external circumstances bend to human powers. Courage and fortitude are here clearly stamped. They are people who usually substantiate by argument or force what they declare. They are the persons who enter a battle to "fight to a finish," and the fight is never finished until they are the victors. This chin is noticeable on Andrew Jackson, who was well known as a fearless soldier and statesman.

The sharp and prominent chin is generally indicative of an inquisitive and crafty nature. This class of people are apt to take an undue interest in other persons' affairs; you will generally discover them in gossip circles and invariably find them to be news-mongers. They are somewhat quick tempered and manifest a super-sensitive nature. They are painstaking investigators, delighted to pry into social matters; they are natural-born detectives and gratify themselves most decidedly in shadowing the suspicious people of the vicinity. The eminent Frenchman, Cardinal Richelieu, approaches this character.

The receding chin betokens that the owner lacks executive force; want of courage is his failing. These people have no mind of their own and are completely under the subjection of some trusted friend. When this chin is accompanied by a short upper lip, and the forehead is receding, it is a safe criterion of weak-mindedness. George III of England may safely be classed as typifying this character. His retreating chin and forehead and the partially open mouth are familiar to all students of history. President Tyler gave evidence of a similar nature. The chin and lower jaw are inseparably associated in the study of the lower third of the face. They contribute very liberally toward giving an expression to the upper two-thirds of the countenance and are the seat of many characteristic symbols. There are three varieties of shapes common to the inferior maxilla, which are deserving of our attention. These are the angular jaw, the round or bulldog jaw and the infantile jaw. The angular jaw is so-called on account of the acute angle which is formed by the union of the ramus and the body of the maxilla, and it is surprising how few matured individuals present this well-proportioned jaw. This jaw is most common in men and it is an earnest indication of firmness and determination. Men with this jaw often pursue

their ends with a reckless, yet stern disregard for their physical welfare; nothing can turn them aside from their purpose, and they attain their success by means of their great energy, perseverance and endurance, rather than by forethought or deep scheming. They are men of the field rather than of the chamber. They are observers rather than thinkers and know no word like fear. Their will power is most active and they are the acknowledged leaders in the sphere of active life. As speakers they use strong expressions, emphasize many words and talk to the point. They have no time for sentiment; scarcely appreciate fine art and laugh at the jingle of poetry. To them this is "a matter of fact" world with no time for rest. Their motto seems to be "to do or die." The great Roman, Julius Cæsar, had such a jaw and his life of conquests bears witness that he was true to his nature. The round or bulldog jaw is usually seen on persons of pugilistic tendencies, though it is quite common to the stern business man. It portrays a tenacious, selfish and decisive character. These people are of an antagonistic disposition, finding great pleasure in wielding their power of "fists" against some opposing human force. The prize fighter's countenance is too clearly seen by your mind's eye to need further description. Ex-President Cleveland bears a most striking resemblance to this face.

The "infantile jaw," as Dr. Oliver Wendell Holmes named it, is designated thus from its analogy to the undeveloped jaw of the infant, having an obtuse angle. People with this jaw exhibit sly and fox-like propensities. They have great will power, but very little courage. They prefer to command circumstances rather than men. They are reserved in the expression of their feelings; they keep their affairs, plans or designs to themselves; are discreet and delight in concealment. They have mysterious, tricky, deceptive and shrewd methods in performing any task. If, when engaged as generals, they are inclined to practice strategy, they much prefer indirect approaching to a straightforward or open field encounter.

In concluding this paper permit me to remind you of the importance of a fair understanding of the various characters which reveal themselves on the human face, and to impress you with the fact that the investigating and searching elements of the coming generation will devote a liberal portion of their time in their attempt to solve the inviting mysteries of psychology, physiognomy and other correlated subjects; the mental as well as the physical characteristics of man will engage the undivided attention of the rising

generations and the wonderful deductions which are yet to come to light relative to mental phenomena, will be as profound as any discoveries ever made.

Matters foreign to the peace and general welfare of our race can claim but little of the coming scientists, for man is awakened to the truth of Pope's remark, "The proper study of mankind is man." And the dentists and physicians cannot remain dormant or regardless to this great truth if they hope in fact to be the benefactors to suffering humanity.

SUGGESTIONS IN THE RATIONAL TREATMENT OF NECROSED BONE.*

BY DR. J. H. WOOLLEY, CHICAGO, ILL.

I shall not attempt in my discussion to offer any new remedies or treat of the chemical action or reaction of medicines; neither will I express myself as believing that we will have to entirely discard surgical means in the treatment of necrosis in the oral cavity, substituting therapeutic agents in their place; but I do believe that certain medicinal remedies are better in some cases than the surgical method. Some clinical cases of necrosis coming under my care that have been cured not by surgical means, but through therapeutic agencies, lead me to believe that many cases can be handled in the same way, causing less loss of healthy bone through the agency of chisels and gouges, and thereby lessening disfigurement.

Any one who has studied the facial expression at all closely knows that the slightest extension or depression of the muscles of the mouth or the bones in the anterior part of the face changes the expression. There are certain fleeting expressions caused by thought, which, in time, stamp the face with an individuality of the person seen only by close observers of physiognomy and expression. If, in the occurrence of necrosis in the oral cavity, the bone is removed by chisel and gouges, there is danger of too much loss of individual expression. I have had under my care some cases of necrosis, the removal of which by chisel and gouges was avoided and I substituted for the heroic the simpler as well as thorough method by therapeutic agents.

I wish to open up the question whether there is any drug or combination of drugs that will hasten the disintegration of the ne-

*Read before the Odontological Society of Chicago.

crossed parts and at the same time stimulate to a healthy physiological action the living bone. One obstacle arising in the use of therapeutic agents is that the pus tends to weaken the action of the acids, making a strong solution necessary. Another is the proper retention of the tents in place. These difficulties arise if we use strong sulphuric acid alone, for we find this drug too destructive to the living bone. Therefore we require a combination of the proper drugs that will be self-limiting, thus minimizing the destructive process on living and healthy bone and tissue, and at the same time act as an antiseptic.

Experiments have been made, notably by Dr. J. N. Farrar, and his deductions from this special work are that sulphuric acid alone acts almost as vigorously on living as on dead bone. The result of these experiments by Dr. Farrar may be found in the October number of the *Dental Cosmos* for 1878, page 531.

Such favorable results have occurred from the use of sulpho-phenic acid in my practice that I wish to record some cases of necrosis cured by this agency.

The therapeutic agent, sulpho-phenic acid, recommended by Dr. Cook, has been to me a very reliable agent. At present I have no experimental data except the results of some of my own clinical cases, but at a future time I hope to be able to give a report in extenso and some reliable experimental data. I have, however, had some cases that have been very successful.

Case 1. A German of pretty fair health with an abscessed left upper lateral incisor and a cyst at the end of left central incisor. My first procedure was to open up the abscess from which flowed freely a large amount of pus. The flowing having ceased, I syringed out the pus cavity with borated cassia water, after which I made an examination of the parts and discovered necrosed bone and a cyst at the end of the left central incisor. My first procedure was to tampon lightly into the sinus my borated gauze tent, my object being to hold back by means of the tent the pus accumulations, thereby causing a destruction of the membrane of the cyst.

Upon examination at the next appointment I found the cyst membrane destroyed and obliterated. At this sitting I syringed out the parts, using as hot distilled water as the patient could bear, after which I used a 50 per cent solution of sulpho-phenic acid on cotton wound around a broach, touching all affected parts quite liberally. I saw my patient every day, and at the end of the third week I dis-

covered upon examination exfoliations of necrosed bone of a reddish brown color and not larger than the grains of coarsely ground coffee. These particles were found on the cotton swab. Closer examination proved that scattered over the surface of the alveolar process there were small sinuosities of necrosis which, to have removed by surgical method, would have required too much loss of bone and a consequent deformity, but which under the sulpho-phenic acid treatment was being slowly enucleated from the healthy bone, leaving the latter in a condition better able to respond to secondary bone formation. Lessening the strength of the sulpho-phenic from 50 per cent to 25 per cent, I followed up my treatment every day up to the fourth week, after which I treated the parts only every two days. By the fifth week healthy secondary bone was gradually taking the place of that destroyed by necrosis. I then discontinued the sulpho-phenic acid treatment and began using borated cassia water as a dressing and tamponing with gauze tent the sinus as it was healing from the inside.

I should like to add that there was a slight exudation of pus until the fourth week, when it gradually disappeared. By the sixth week the case was discharged as cured. The most remarkable result was that the large area of bone destroyed by necrosis was replaced with healthy, living bone, showing the restoration of new bone was hastened by this drug.

The next case was one of great interest to me, being of 20 years' standing. The gentleman, Mr. B., was an American of about 50 years of age, of good health and constitution. He had been under the care of dentists, but had received no benefit, owing to his irregularity in taking his treatment. Upon examination I found that there were pockets of necrosis caused by an abscessed tooth, the left central incisor. There was living bone under the cuspid, bicuspid and molars of the right side, but near the antrum, within one-sixteenth of an inch, I found necrosis, pipe-like in form, and lengthening out under the healthy bone. Because of its inaccessibility, to have removed this necrosed condition by surgical means would have endangered the life of the cuspid, bicuspid and possibly the two molars, besides producing an incurable deformity. Therefore, to my mind, the best thing to do was to dissolve the necrosed part by therapeutic agents and retain as much healthy bone in the mouth as possible. There was a considerable discharge of pus and quite an offensive odor. Proceeding with my first treatment, I thor-

oroughly cleansed the parts by syringing them with borated cassia water and after drying applied sulpho-phenic acid to both the living and dead bone. I then closed the opening with borated gauze tent. The same treatment I repeated every day for two weeks, with some abatement in the discharge of pus, but not enough to satisfy me; whereupon I made another examination and found that the right cuspid would have to be removed. This having been done, I continued the same treatment for two weeks longer, lessening the strength of the sulpho-phenic acid to a 25 per cent solution. At the end of the fifth week there was very little, if any, discharge of pus and I pronounced the patient practically cured. Watching the case a week longer I found at the end of the sixth week the discharge of pus discontinued entirely and the cure was complete and patient discharged.

"There are diseased states that arise in the peridental membrane, which result from many causes, but which are not exactly pathological, for they still carry on vital functions, but having a lower vitality and a condition of hypertrophic cell expansion or atrophy." I have found this condition existing from various causes, such as pulpitis, imperfect instrumentation in filling root canals, pyorrhoea, etc. My rule has been in diagnosing cases of this character, to determine the cause of this hypertrophic or atrophic condition and try to remove it first. If the trouble arises from root canal filling, I first treat aseptically the canal, and if it is not relieved in a reasonable time, fill the root and open up through the gum on the area of inflammation and find out the pathological condition. If a small area of bone is necrosed, I treat the diseased part with sulpho-phenic acid until it responds to the treatment and is cured. Some cases of this nature, however, require much more extended operations.

I recall a case similar to the one in question. A young man, a teacher, not of a very robust constitution, had a hypertrophic condition of the peridental membrane in the left upper central incisor near the apical third of the root. Upon examination I found a pus pocket and a surface of necrosis covering an area about the circumference of a dime. He complained of a large and hard lump just under the nose. I used sulpho-phenic acid in the same manner reported in my other cases and dismissed him cured after four weeks.

PRESIDENT'S ADDRESS.*

BY DR. C. E. PITTMAN, EVANSVILLE, IND.

A year ago one of the most unexpected events of my life occurred, when, by your votes, you declared me your presiding officer for the present year. Furthermore, I am not unmindful of the fact that to be the recipient of the highest possible honor which lies within the gift of a State organization at first impresses the mind of an individual possessed of a modest temperament with some fear and apprehension as to the success or failure of the undertaking. However, I assume the duties of an uncoveted office with a justifiable pride, feeling that I shall preside over a meeting this year which for a record of work accomplished in the dissemination of useful information both of a practical and scientific nature has never been surpassed. I base this prophecy upon the program presented, and the time it has been in the hands of the members.

Our association is again in session with the same motive in the hearts of the members which prompted its organization forty-four years ago—the advancement of dentistry. The interchange of ideas and the illustration of individual methods of practice, as exemplified at our meetings, have been the means of keeping the active practitioner ever alert to give his patrons the advantage of the best methods.

Dental associations have been the means of placing dentistry on a firm foundation among the learned professions by compelling the recognition of the rights and privileges of dentists by the State governments, causing them to enact wholesome laws regulating the practice of dentistry, by protecting the unsuspecting public, and, through our State examining board, by requiring proper technical knowledge on the part of the practitioner. We must not rest on our laurels, however, but seek others.

The dental colleges have been largely the children of the various associations and are now relieving them to a great extent of the work heretofore done by these bodies, and it will be necessary for us to adopt new lines of work, perhaps look more to the social features (and where could we find a more beautiful place than Lake Maxinkuckee to have a beginning of such functions?) also to increasing our membership. This fact is worthy our serious consideration. I am of the opinion that local, State, interstate and

*Read before the Indiana State Dental Association, June, 1902.

international dental conventions have done more in the past and will continue to do more in the future toward the uplifting of our profession than any other one thing with which I am acquainted.

In view of these facts let us not allow our zeal or ambition to languish in pushing forward this most laudable movement. Encourage the younger men, and especially impress upon those just emerging from college doors the necessity and importance of engaging in society work at the earliest possible opportunity. The countless benefits to be derived from associative work tend greatly to lessen the graver responsibilities which so frequently waylay the young practitioner in his earlier experiences. The influence of personal contact with older and more experienced workers cannot be otherwise than beneficial in molding, cultivating and stimulating a higher grade of professional character and attainment.

Furthermore, the familiar faces which I see here to-day, and which for more than a quarter of a century have rarely failed to be present at the first sound of the gavel, should most impressively remind the younger members of this society that those old members are still worthy of emulation. I feel safe in saying that the Indiana State Dental Society to-day is a recognized leader in dental circles, and as such its standard must be maintained in the future as it has been in the past. The available talent at our command in the various fields of dental science justifies our faith in believing that we are still in the front rank of progress.

It is not my intention to take up your valuable time with a long winded address, for I think the time can be more profitably spent in listening to the numerous papers before us. Let us all enter into the spirit of the work before us so that when we leave this beautiful spot we will feel that we have been greatly benefited.

In conclusion, I have performed one official act during the year, in connection with the resolution offered by Dr. Frank W. Sage.

"Resolved: That the presidents of the State societies composing the Tri-State Dental Association be requested severally to appoint committees to confer with and act conjointly with Dr. William Taft of Cincinnati, regarding the securing of subscriptions to compose a fund for the erection of a memorial monument to the memory of the late Dr. H. J. McKellops."

I appointed as such committee Drs. Hunt, Gilmore, Wirt and Clayton, and no doubt they have attended to their duties faithfully.

THE SYSTEMATIC INFLUENCE OF MERCURY IN AMALGAM AND RED RUBBER.*

BY DR. O. M. BROWN, TERRE HAUTE, IND.

In recent years dentists have encountered a good bit of blame for placing amalgam fillings and red rubber fixtures in the mouths of their patients. The homeopathic physician claims that from these sources sufficient mercury is absorbed into the system to produce clear mercurial poisoning, which, though in mild degree, is yet enough to throw the system out of balance and cause derangement of the spleen, stomach, liver, kidneys, nerves, mucous membranes, the skin, etc. We have on various occasions had patients sent to us with *orders* to remove any amalgam fillings or red rubber, as the case may be, the physician saying he could do no good so long as these exciting causes were present.

On the other hand we have the regulars who doubt the wisdom of this theory, believing that if any mercury could be taken up from this source, it would be so infinitesimal that the system would not in any degree or sense be disturbed in its functions.

In support of this last conclusion we would cite the fact that the human machine is created to resist a considerable and continuous amount of poison, and were this not so, death would be universal and complete. The matter, therefore, is not settled by unanimous consent.

In our efforts to make deductions we have reflected that as an amalgam retains its integrity by virtue of the mercury in its compounds, it would disintegrate in time if its mercury was by any means extracted. It must at least suffer great shrinkage, as it contains from thirty to fifty per cent mercury by weight. These effects have not been observed in fillings which have done service ten, fifteen and twenty years, or even in rare cases, thirty years or more.

As to the coloring in red rubbers, the sulphide of mercury, or vermilion is used. It is an inert compound, quite insoluble in either nitric, sulphuric or hydrochloric acids. It is unaffected by water, alcohol or an alkali. It requires 600° F. to decompose. As the heat attained in vulcanizing ranges from 280° to 320° F. the margin is so great that there is no liability of its decomposition from this source. *Aqua regia*, however, will dissolve it and convert it into corrosive sublimate, but this reaction comes when strong nitro-

*Read before the Indiana State Dental Association, June, 1902.

hydrochloric acid is used. When this combination of acids is given as a tonic, from ten to twenty drops, in a glass of water, is the range of strength, so that it is scarcely probable that any reaction would result.

In some low, cheap grades of rubber the vermilion is adulterated with red lead, disulphide of arsenic, or ferric oxide, and it is possible that this adulteration might account for a part of the ill effects encountered by the wearer of red plates. Another detriment to the tissues is caused by the nonconductive nature of rubber, preventing the dispersing of heat from the covered surface, and causing a scalding, which might be misjudged as some mercurial irritation.

In order to try to test this matter we fitted up a heat chamber with a thermo-regulator so that we could maintain, day and night, a temperature varying but slightly from the normal 98.2-5 F. in moist atmosphere. In this were placed glass tubes containing saliva, in which a quantity of fresh amalgam filling was present. The saliva was taken from the mouths of various patients, some of whom had been under orders to have amalgams removed. Other samples were from nervo-bilious persons, this temperament seeming to show most frequent digestive disturbances. All were subjected to the moist heat day and night, from one to three weeks, being frequently shaken, and at the conclusion of this time the saliva was poured off and tested for mercury.

Before beginning this we had worked on known solutions and found that we obtained a ready reaction on a 1 to 4,000 solution, and a faint trace in 1 to 5,000 with the reagents at our command.

Our results have not been sufficient to settle the matter, but give a few hints on which to build a beginning. In the saliva samples tested there was not a single reaction which gave any certainty of the presence of mercury. One sample, tested by Dr. W. A. Noyes, to whom I am indebted for help and suggestions, gave a faint suspicion of mercury, but of minute quantity. These samples were used just as they came from the mouth.

Other tubes were used, the saliva in which was acidulated some with acetic, some with lactic, some with hydrochloric acid. In one, containing lactic acid to about two per cent strength, a decided presence of mercury was shown in the test. Following this test we reduced the amount of lactic acid until we came to a tube having just enough acidity to give a mild reddening of litmus paper.

and after six days' exposure to amalgam we got a clearly perceptible reaction, showing mercury in the saliva.

Now lactic acid is liable to form in the mouth whenever there is fermentation from any cause. Would it not, therefore, be well to look deeper into this discovery? Our time has not yet permitted it, but let us hope that some capable men will become interested in the importance of the possibilities suggested; for, if under certain conditions possible in the mouth, mercury may be freed from amalgam in noticeable quantity, we must admit that very susceptible constitutions might suffer ill results.

There is no doubt one's education, his special school, and his personal equation influence his conclusions. Personally we are not yet forming conclusions, as many things are yet to be learned. We started out believing impossible the very thing which a test has shown us to be true, namely, that free mercury could be detected in saliva. On the other hand we have seen the amalgam filling and the red plate condemned in cases where we *knew* and *proved* the conclusion to be wrong.

We have seen amalgam accused as the cause of pulp irritation when the real cause was over zeal to conserve a badly irritated pulp, and the same results would have come under gold.

Each man present could cite many cases where irritations were present coincident with the presence of amalgams or red rubbers, but to relieve which there was more need than merely removing these materials.

We know the influence of suggestion on the mind, which rules in a body out of poise, therefore when a doctor tells his patient that she cannot recover so long as that amalgam is present, the wise thing is to replace it with gold and leave the argument out.

Our object is not to quote the various ideas of other men. We made a few simple tests along a road yet new. We have reported the little we saw, and hope it may help to point the way for other and better things.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held Feb. 4, 1902, with the vice-president, Dr. George B. Perry, in the chair.

Dr. William Mitchell, of London, England, read a paper entitled, "Artistic Treatment of Artificial Teeth."

DR. A. O. HUNT was asked to open the discussion. He said: Mr. President, Ladies and Gentlemen: It is a pleasure, and I also consider it a privilege, to be asked to open the discussion on the admirable paper presented by Dr. Mitchell. Most of us have known of his earnest labors in various departments of our professional work, and he always brings with him something new and interesting, and this is especially so as coming along the line of the advancement in porcelain work.

So far as dental manufacturers ever furnishing us with artificial teeth that are going to meet the demands of special cases is concerned, there is very little hope that they will do that. It is not to their interest to do it. They are merchants and have no particular interest in the professional or artistic side of dentistry, other than to dispose of whatever wares they may succeed in manufacturing; and in any event the paper deals with a subject that is entirely outside of their work, and anything to be accomplished along this line must be done by individual effort, and the results obtained must be in harmony with the conditions that exist in the mouths of the patients for whom we are operating. It is not possible for anybody to make a set of teeth or type of teeth, with all these varying pathological conditions, that will meet the condition in the mouth very much better than is done at the present time. That is why I say it requires individual effort, and whatever modifications are made in the artificial teeth must be done at the time and for the individual to harmonize such peculiarities as may be found in the teeth.

The doctor speaks in his paper of the difficulties of securing high fusing colors, that they change more or less in the firing, and as yet we have not found exactly the thing necessary to produce this class of work in its highest art. However, it is improving all the time. Mr. Brewster has lately given us some colors that can be used along this line and in the same manner, and they have the advantage of retaining their shade and color under the fire; that is, the furnace

does not destroy the delicate tints or change their character in any manner. The enamel is a high fusing enamel, so that when a tooth is manipulated according to the process given by the doctor, there will be little or no opportunity for a change occurring in that tooth, if it is put in the vulcanizer afterward, or is to be soldered, because it would not have to go through heat sufficient to cause any change in the color.

For a number of years efforts have been made along this line of staining teeth to give darker shades or showing the irregularly colored surfaces, reproducing the pathological conditions that show upon the face of teeth; but these colors have been of a class that have been used by the ceramic artists, and while they stand the fire to a certain extent, yet they are not suitable for our work. However, the doctor's paper is directly in the line of a class of work that, it seems to me, must become not only popular, but, at the same time, it is necessary that this sort of work should be done in some form in order to get perfect results in putting in artificial substitutes in the mouth, whether it may be one or many, because in partial cases it is not an uncommon thing to find that we are utterly unable, in going over a dealer's stock of teeth, to select a tooth that is suitable to the case; and the growth and advancement and conveniences that we have at the present time for fusing porcelain and manipulating it are going to open the way, in my judgment, for this sort of work, and for high artistic results. But it must be done by individuals. It cannot be done by the wholesale.

I want to thank Dr. Mitchell for presenting this admirable paper before us for our entertainment.

DR. E. J. PERRY: I have not had the pleasure of reading Dr. Mitchell's paper. In the paper he has taken up a phase of the question which I did not suspect he would treat. I have prepared some thoughts touching the artistic selection and arrangement of artificial teeth. I had supposed that the paper would be on this line. I wish to express my appreciation of his paper, and also of his work in this particular line in individualizing the artificial teeth as they come to us, and, as Dr. Hunt has said in his discussion, the individual dentist must take the material which he can buy at the dental depots, work it over, and adapt it, so far as the stainings, etc., are concerned. There has been no time since I have arrived at the age of professional responsibility that I have not ground, twisted and turned an artificial tooth or artificial teeth in an effort to ar-

range them in a manner to deceive the public. My thoughts on this subject are on an entirely different line from the paper, and while I do not wish to change the trend of thought, I desire to offer a few suggestions of my own on arrangement.

I wish to lay down this general proposition: I hold that the perfect prosthesis should understand the physical organization or temperament of the individual. If you hand him a central incisor, a cuspid, bicuspid or molar, and if the tooth has not been dried and its color lost, he should be able to tell you the complexion, the color of the hair, color of the eyes, etc. So also is the reverse of this proposition, true. If you bring to the perfect prosthesis the physical organization, minus the teeth, the edentulous jaws, he will be able to supply the teeth indicated by the temperament of the individual. I do not think I can do it, but I shall keep on thinking on these lines and endeavor to approach it. I hold that the occlusion and the articulation of the teeth are so intimately connected with their physical forms that one cannot be understood without the other, and I will begin with two types of individuals, representing distinctly the motive and lymphatic types.

Through the kindness of Dr. B. J. Cigrand he has loaned me two pictures. These pictures he had made to illustrate a paper which he read before the Illinois State Dental Society in May of last year. They are pictures of two distinct types of temperament, of physical organizations. I do not mean by temperament the color of the hair, of the eyes, or of the skin, but I mean the original physical organization of the individual. This lady (referring to one picture) has pronounced angular features. She has a deep arch. She has long, angular cusps on her teeth; she could not have any other kind. She has a deep over-bite, and a deep compensating curve; I mean by that a deep dip in the plane of occlusion.

The other lady is altogether different in build. She has heavy, massive jaws; round, oval, mobile features; her teeth are square, heavy, occluding upon their grinding surfaces all the way round, with scarcely a perceptible compensating curve. No over-bite whatever goes with such features. Now, every kind with which we come in contact are gradations from this or from that type. They grade one from the other, so that these may be taken as typical cases, and the cases which we may have in our offices are, all of them, modifications of one or the other of these. It would be strange, indeed, it seems to me, if the physical organization of the individual indi-

cated the complexion, the color of the hair, or of the eyes, and did not indicate also the shade and shape of the teeth. It strikes me, therefore, that nature holds the secret.

I have some extracts in my pocket which I have taken from other writers on this subject, and if you will have patience with me I will read them. It is part of a discussion which I prepared for a paper on temperaments written by Dr. George B. Perry. I did not see his paper before it was read, but I wrote a discussion of the *subject*, and when I came to hear his paper, I found that the discussion did not fit it, and consequently I did not offer it. I have been hunting around for a long time for a paper that fitted my discussion, and while Dr. Mitchell's paper does not *exactly* fit it, I am going to inflict it upon you.

For many years I have been deeply impressed with the indefiniteness of statement concerning the indications for the various shades, shapes and sizes of artificial teeth. I have contended that nature held the secret if we but knew how to ask. I have had patients complain to me of their natural teeth when really they were nearly perfect. Too yellow, too dark, too large, they would say. My constant reply has been, Why make this complaint to me? Go to your Creator. Any shade but the one you have would be hideous for you. Nature has *painted* the *picture* and any suggestions I might make would be along the lines nature has made. That shades and shapes and sizes and the arrangement of artificial teeth touching the esthetic may be learned from the temperamental indications there can be no doubt. Just as the study of mastication and the laws governing articulation of teeth will reveal to us definite laws by which we can articulate artificial sets. How does nature do it? Has she not definite laws? Can we not find them out? This is the practical thing for us. The study is a deep one, but its mastery is a rich reward and a great blessing to our patients. Then, we will be artists, but we must also be master mechanics—a blending of the two. All who are master mechanics are more or less artistic, but all artists are not masters of mechanics. We must have the power to execute our conceptions. The question of temperaments in its bearing upon us as dental prosthetic artists seems to have been lost sight of latterly.

The American System of Dentistry, Vol. II, contains an able contribution to the subject by Dr. H. S. Ivy. He says: "It has been questioned whether the classification of individuals according

to temperament is in practice worthy of the importance some writers assume for it; the substitute offered being a classification by *race*." He also says: "The various characteristics attributed to temperament are, however, *not* without great value under certain conditions. But the arrangement of mankind into a number of permanent varieties or races is based on grounds much more definite." He quotes Dr. Hutchinson, who says: "Are we not obliged to confess that we have but little to guide us in the classification, excepting what we mean by complexion, etc. Temperament is generally held to mean something more. Temperament concerns the original organization of the individual. Diathesis and idiosyncrasy, while often used synonymously, have a separate and distinct meaning and application."

On page 1047, Dr. Ivy says, touching the temperamental indications for the esthetic arrangement of artificial teeth, "the probability is that in many, perhaps in most, of the cases of artificial dentures, the fault is not in carelessness or indifference of the dentist, but in a failure to *recognize* the requirements of temperament. A certain family resemblance to each other in a set of teeth is considered essential, but the adaptability of the set as a *whole* to a given case should be esteemed of even *greater* importance. Especially is there a notable failure to recognize the *color* demanded by *form*. A set of teeth in which not only the relative length and breadth, but every line and curve, characterizes it as belonging to a certain temperament, is, in contravention of every law of correspondence, made of a color which was never found in nature associated with such forms. Thus we see constantly such incongruities as the association of the massive tooth of the bilious temperament with the pearl-blue color belonging to the nervous temperament, and the long, narrow teeth of the nervous temperament of the bronze yellow color, never seen in any but those of a bilious temperament. The fact is the requirements of the laws of correspondence have not been sufficiently studied by the profession. The first study of the dentist who aspires to the dignity of an artist, when proposing to replace a lost denture, should be how to restore the natural appearance of his patient; and this can only be affected through the appreciation and observance of the *temperamental* characteristics *and* the law of *correspondence* and *harmony*. A failure to recognize its demands will result in failure from an esthetic standpoint, a knowledge of the distinguishing characteristics of the various tempera-

ments and the styles of teeth which conform to nature's type in the physical organization, marks the *difference* between the dental *mechanic* and the dental *artist*."

Then, again, on page 1052, he says: "To obtain the best results, no definite rules can be laid down, as each case varies as to individuals, the art of *restoring expression* being acquired only by observation and experience." This apparent contradiction or uncertainty of statement is confusing, and I cannot see how his conclusions tally with his premises, although I am bound to admit that we must depend on *observation* and *taste* to help us in the *modifications*. But an understanding of the *basic* principles will aid us in making these modifications in conformity to definite laws. I have for years made a practice of noting shades of natural teeth, their shapes, size, length of cusp, over-bite, etc., and then noting the temperament as indicated by complexion, hair, eyes, build, etc., of the individual possessing these teeth. The arch is also an indication. By adopting the habit of observation and study, I have no doubt we can sooner or later dig out data or laws which can be laid down as definite by which the student can begin, at least, an intelligent study of this very, and I may say intensely, fascinating subject.

I do not know that I can say any more on that subject or say it any more emphatically. But it strikes me that there is where we must begin, and, as I have said to the students over at the Chicago College of Dental Surgery, when they ask me how I went at this thing in a practical way, my reply has been this: "My shade ring is always handy, and when a patient of a distinct type like this or that (pointing to the pictures), or a person of a distinct brunette or distinct blonde, having light hair and light eyes, and a light complexion, I note the color of their teeth." I confirm myself by making observations, and I cultivate the habit of observing. I do *not* believe with Dr. Ivy that the build of a patient indicates in any way the *color* of the teeth. I cannot make it out from my observations. I think the physical organization of the individual has special reference to the *shape* of the tooth, and I think the hair, the skin and the complexion of a patient indicate the *shade* of a tooth. But that is as far as I have gone on the subject. I am observing along this line, and learning, and again I wish to thank Dr. Mitchell for taking up this subject. It takes considerable nerve for a man to come here and present the subject of prosthesis, like Dr. Mitchell

has. I am glad to have such a strong man take hold of this subject, as there are so many operators who will not take hold of it and study it. Some of the finest operators in Chicago, if a patient should come to them without any teeth at all, would turn such a patient away, and say, in effect, that they cannot do *anything* for him or her, as the case may be. They will go to dental societies and shed tears over decaying teeth, but not a tear over a *woman* who has no teeth at all. *This* is an *unoccupied* field. It is one of the grandest departments of dentistry, and I most earnestly appeal to the men who have made operative dentistry what it is to take hold of this subject from a scientific and artistic standpoint.

DR. B. J. CIGRAND: I did not expect to be called upon to discuss this paper, nor did I give it very much thought. I wish to say, however, that I am grateful to Dr. Mitchell for the very clear way in which he has treated this subject of dental art. It is really a question, as I understand it, of the art side of prosthesis. I am very glad Dr. Mitchell has paid special tribute to one of our own city, Dr. Royce, for having awakened in this field of work a new thought, and I presume it is one of the best ideas that has been given to prosthetic dentistry during the last year. Dr. Royce some months ago read a paper before this society in which he clearly showed the necessity of giving variation of shades to the teeth in full cases. He has conclusively demonstrated that, in a normal set of teeth, there are a great number of shades; that is to say, the laterals are of a peculiar shade; the cuspids are of a peculiar shade; the centrals are of a peculiar shade, and the bicuspid and molars accordingly. And he has shown us further that even the laterals are not of the same shade, but that there is a great variance in all these shades. It is one of the most important contributions to the art of prosthetic dentistry we have had this year. I am trying to follow it out, and I am getting splendid results from it. I am at the present time taking as many as five and six sets of teeth and arranging them for one set, and it was that same idea that prompted me to show before the Illinois State Dental Society last May a set of teeth, articulated and occluded, according to the ideas I advanced in that paper, and the set of teeth I showed at that meeting was made from seven different sets of teeth.

I am inclined to think that Dr. Perry, in his overzealousness to do justice to the subject, has not paid sufficient tribute to the Illinois State Dental Society, the Odontographic Society, and the Chicago

Dental Society. I believe the prosthetic division of our art has received more attention in these three societies than it had received for six years previously, and so we ought to be glad that the members of those societies have given it the consideration they have.

As regards the variety of shades I spoke of, you will find that if teeth are constructed on that plan, the variation of shade will give a magnificent set of teeth. It is following out nature's great law of correspondence, and if we do not adhere to this great law we are artisans, and not artists. That is the difference between the mechanical dentist and the prosthetic dentist, the former being an artisan, the latter an artist. The mechanical dentist is a man who performs dental operations and substitutions removed from his patient. In this connection I will say that the man who constructs Logan crowns or other ready-made crowns for the dental manufacturing companies is, in a sense, a mechanical dentist. He does not know who is to have these crowns put in their mouths; since he is removed from the patients; he knows nothing about their facial outlines or temperament, and simply attends to the mechanical. I have had opportunities of noticing while visiting these manufactories with what drudgery these things are done. One day these mechanical dentists will make a certain kind of Logan crown, and to-morrow they will make another kind. The prosthetic dentist, on the other hand, must be a man who is in close contact with and understands the character of his patients. He must understand anatomy, physiology, therapeutics, bacteriology and all of the kindred sciences taught to-day in the dental colleges, and he must have a general knowledge of all that belongs to the subject of dentistry. It is perhaps not in strict accordance with the tone of the paper, and yet what we do in the office must be done for the patient in the chair. For that reason, I believe it is unwise to send out what we wish done in a prosthetic sense to dental laboratories, because at these places they do not know the temperament, the occlusion, or the articulation of the patient for whom they are going to construct a denture, and the product must invariably be abortive, since they simply select a certain set of teeth that they think will fill the bill. If the dentist will send with the model which he sends to the laboratory the exact size, shade and shape of the tooth, the character of the temperament of the patient, the general arrangement of the teeth, so that the laboratory man may know that he is working for a person of a mental temperament, a motive temperament, lym-

phatic temperament, or a sanguine temperament, he will have a good general and fairly intelligent idea of what he is doing. Let us give the laboratory man something of a guide—a printed tabulation requiring simply specialties of the art of prosthesis, and not so much of the mechanical side, and the result will be gratifying.

With reference to the matter of shades of teeth, there is scarcely a Logan crown set in the city of Chicago or elsewhere which is not from one to two shades too light. Possibly it is our own mistake. We have been taught in the dental colleges that before setting a Logan crown, or any artificial tooth, we should clean the teeth. That is proper, but we must consider, when we match those teeth, that when we have thoroughly cleaned them they are not going to stay that way. You may tell a patient to brush his teeth three or four times a day, and invariably he will not do so. After the Logan crown is in the mouth six months, although it was perfect as regards the law of correspondence when it left the office, how does it appear now? It is too white. It seems to me, we match the teeth too carefully in some cases, and I think in many instances after we set a Logan or Richmond crown the color is a trifle darker than the case indicates, and after you have cleaned the teeth the patient will look decidedly better. Of course, it will have been a deception to the public, of which Dr. Perry spoke and in which we all agree. The deception of art is true art, and by so doing we will have made a step forward. I agree with Dr. Mitchell that this work cannot be done away from the patient; it must be done in the office.

In closing, I wish to say that I think the dental profession throughout the United States is paying more attention to the prosthetic side of dentistry and we are receiving credit for things that are new and original, and we are progressing very rapidly. There is no question about it, and we should realize also that there must be more attention given to the art side of dentistry in our dental colleges. Let us take the Northwestern University Dental School, the Chicago College of Dental Surgery, and the Dental Department of the University of Illinois, and we find that these splendid institutions pay too little attention to the art side of prosthetic dentistry. The students are not trained to match these shades. Many dentists call them colors; they are not colors, but shades. They are not taught to match crowns. What do they do? They go to a dental supply house to get teeth, and usually they say to the supply man, "I would like a tooth to match this tooth," and they expect the man

at the counter to match the case for them. Now, the student should do this himself, and more time should be given to the *real art side of prosthetic dentistry*, and the colleges would be fulfilling their purpose.

We have been very fortunate in having Dr. Mitchell here to give us these ideas. Personally, I shall be glad to accept some of the thoughts he has given us, and I shall endeavor to incorporate them into my daily practice.

DR. W. T. REEVES: The paper of Dr. Mitchell treated of the artistic possibilities in matching individual teeth, where we have a difficult case, a malformed or a discolored tooth, or something of that kind, that we need to match in order to make it look harmonious. I was very glad to hear the paper because it is along this line that I have been working for a number of years, and while my work has been more in the endeavor to match the natural teeth with inlays, I have found it of great service in connection with the making of crowns and bridges. For a number of years I tried to produce those effects with the mineral paints that china painters use in china decorating, and there were as many failures as there were good results from that direction.

About two years ago Mr. Brewster, at my solicitation, produced five, what I call, primary colors, that were high fusing bodies, bodies that fused up to or very near the temperature of Close body, so that in the use of them there was no danger of the colors burning out, and they were so deep as to require to be painted on the back of the facings that we use in crowns or bridges, or in making artificial sets, and I have found them of great service and have used them frequently in that direction. I have two samples in my pocket that I often show, which were produced by these high fusing bodies. This one (indicating) is painted on the back of the facing to give a blue tint that we get in so many teeth which it is almost impossible to reproduce. The other one shows a blue effect on one-half and the brown effect you would get in a tobacco-stained tooth on the other half.

I think the samples Dr. Mitchell has with him are very artistic, and show the possibilities there are in this line of work. I regard it as a line of work that every dentist ought to take up.

DR. HART J. GOSLEE: Personally, I have enjoyed the essay of Dr. Mitchell, and appreciate the fact that he has brought out some ideas that are of interest to us from a purely artistic standpoint.

While I do not know that I can add anything to what he has said, and shown by the teeth that he has presented, and while I appreciate the discussion that has been indulged in by Dr. Perry, I trust a few remarks along the line of the original thoughts of the paper may not be out of place.

I think that the dental profession should not expect the manufacturer to supply them with these artistic requirements, or, in other words, that they should supply the dentist with teeth with which he may be able to reproduce and simulate nature in its various individual characteristics. That lies purely within the province of the artistic dentist, and not of the manufacturer, or the artisan, or the laboratory man. Only by doing it ourselves can we become artistic in the practice of prosthetic dentistry, and expect to produce a reproduction of such conditions as have been presented by Dr. Mitchell.

One of the most artistic things that I know of is the exact imitation of those individual characteristics that occur in the remaining natural teeth. I do not believe that we are required to make so great an attempt to produce them in the edentulous mouth, but we should put forth every effort to imitate the remaining natural teeth, in plate as well as crown and bridge work, and that can be best done in the manner suggested by the essayist in coloring and shading the artificial teeth that are to match those remaining in the mouth. The only way I have been able to do this is by following along the lines suggested by Dr. Mitchell and Dr. Reeves, with basal colors painted on the backs of the teeth, by which means we have shadows and shadings shown through the translucency of the porcelain body of which they are composed. Dr. Reeves has shown us the beautiful results which can be obtained in inlay work by so painting the under layers with basal colors and bringing out the desired effect in the finished inlay.

In regard to crown, bridge and plate work, in which I am especially interested, it does not matter how carefully we select the shade of a tooth in matching it, or how carefully we grind it to conform with the shape of the corresponding and adjacent teeth, the minute we place a backing on it we entirely destroy its translucency, and have a different effect than is desired; and the only way we can overcome this and produce the desired effect is by placing something of a mineral nature, in the shape of paint, between the porcelain itself and the metal backing.

Dr. Reeves, I believe, originally presented that thought to the profession as a means of overcoming the shadow problem in inlay work, and we are indebted to Mr. Brewster for having brought it out in the shape of high fusing mineral paints, and I want to approve of it in every sense, as beautiful results are to be obtained from their use. I have experienced no difficulty at all in these high-fusing shades being burned out or destroyed to any extent by the excessive heat of the furnace, let alone in the process of soldering or of vulcanizing, and if one can secure the desired effect at the beginning, it will remain throughout the construction and completion of the work.

I am thankful to Dr. Mitchell for contributing some original thoughts along an artistic line, and feel greatly indebted to him, and am sure the members of the society are also so indebted and will be stimulated to more artistic endeavors.

MR. BREWSTER: I do not know that I can add anything of value to what has been said to-night; but in looking at the samples Dr. Mitchell has produced, they seem to me very artistic ones in the reproduction of natural teeth. I have seen a great many instances of shaded teeth, representing all kinds of changes in the mouth, made by manufacturers, but they never have seemed to be very artistic. They were different. Those that we have seen to-night have been done by an artist who understands what he wants to produce. In the case of high fusing paints, the colors will remain permanently, and are more intense than those colors Dr. Mitchell has had made, and they will show through porcelain facings with better effect.

The profession is indebted to Dr. Reeves particularly for having had these colors produced, because I think the manufacturer is somewhat at a loss in working away from the mouth, and it is a difficult matter to reach that degree of perfection which is really desirable. The profession are really more indebted to Dr. Reeves for what he has done in that line, at any rate, in Chicago, than they are to me for what I have done as a manufacturer.

DR. J. E. NYMAN: There is one point that occurs to me, and that is, the reason why a tooth does not present a natural appearance in the mouth is due to the fact that its shape on the buccal surface does not correspond with the curvature of the majority of the incisal teeth, while the color of the porcelain itself may be identical. The reflection of light from the surface, which is more convex than

the surface of the other incisal tooth, gives the tooth a different appearance in the mouth. A cross-section of an incisor tooth, showing the curvature of the labial half, so to speak, will be found to vary all the way from nearly a circle to a flattened ellipse, and if you have a tooth with a considerable convexity of the labial half, a semicircle where the cross-section would be, and place it in proximity to the tooth with a cross-section of the flattened ellipse, you would get a different effect.

Inasmuch as I have relied mainly on the Dresden colors, believing that they are more satisfactory than any others, and which fuse at about the fusing point of gold, I have done all of this artistic painting or staining after I have completed the crown, so as to avoid any danger of bleaching out in the fusing of the porcelain body.

There is one thing I forgot to mention. I do not hesitate to grind off the entire labial surface of the facing and give it the curvature that should be given to it to correspond with the adjacent tooth. In fact, I invariably do that, instead of wasting time looking for another shade with a convexity that corresponds. In doing this, I am particular to grind the face of it dry, with carborundum stones, running it at a low speed to avoid developing much heat, and, at the same time, I keep a blast of air going on the facing all the time to blow the dust out of the little pores of the porcelain. Following this treatment, the tooth is polished down with sandpaper disks.

DR. C. F. BRYANT: I would like to ask Dr. Mitchell in regard to the teeth he uses, whether they are of American or English make?

DR. MITCHELL: You can use any teeth. We use principally the English make of teeth, but we are not confined to them. We can use American teeth. I believe a number of those teeth that were sent around are American teeth.

DR. TRUMAN W. BROPHY: I would like to say a few words, not that I will be able to throw any light on the subject of the paper, but I wish to say to the members of the Chicago Dental Society that when I was in London last summer, Dr. Mitchell exhibited some of this work to me, and I asked him if he would be willing to read a paper before this society this winter on the subject, as he was coming to America, and he kindly consented to do so.

It seems that in this department of dentistry, as in the other practical department of operative dentistry, we are making rapid strides. It would have been impossible for a gentleman fifteen or

twenty years ago to have had an audience on a subject of this kind, because the average dentist could find dental supply houses with teeth suitable for any purpose to which he wished to put them. Now, we see this rapid change going on, and as I was listening to the closing paragraphs of the paper this thought came to me: What are we coming to, and how are we going to measure the advancement which we are making in the development of the artistic phases of our profession? It seems to me, we are drifting into a porcelain era: that we are getting so much out of porcelain in the way of inlays and in the way of artistic artificial teeth, crowns, etc., that will enable us to imitate nature. Those of us who are able to adapt a tooth here and there in a broken denture by the adjustment of a crown or an artificial tooth, with no visible attachment, and make it so artistic that it cannot be detected by people generally, think we are doing the highest and most perfect work.

Somebody has said that almost all artificial teeth, for instance, mentioning the Logan crown, were too light when they were put in. I think they were too light when selected, and that is one of the great failures observed in this kind of work. If I were to make a choice between having a tooth a little too light or a little too dark in a denture in a case where I had to adjust a crown, I would prefer to have it a little too dark, as I think it would be clearly detected as an artificial tooth if it were too light.

Dr. Mitchell's method of coloring teeth and the demonstrations he has made are excellent, and, in speaking of the work he has done, I, of course, will not omit mentioning the names of Drs. Reeves and Royce, of our city, who have done so much in this line. Dr. Royce read a paper here a short time ago that startled some of us on the subject of coloring teeth and the selection of different colors for the same denture, and when he read his paper we felt he was right. There was not a dissenting voice; but it was a new thought to many. We all know that those of us, who have the full complement of natural teeth, have teeth of different colors; even though they have never been diseased, or become carious. It is impossible to find in any mouth of a young person, whose teeth are absolutely sound, except some minor cavities, all teeth of exactly the same color. Such conditions do not exist; and yet we know that the manufacturers, in making artificial dentures or sets of teeth to be used for the purpose of making dentures, make them of the same color.

It is really refreshing and gratifying to those who are interested in the development of dentistry up to the highest possible degree of perfection to see such work and to hear papers such as we have had this evening, and to have them discussed by so many gentlemen who are deeply interested in the subject of elevating this department of dentistry to a high plane. All of us know that this department of dentistry has been more neglected, less considered and less thought of, and more disregarded, than any other during the last twenty-five years. It is gratifying to see the rapid improvements that have been made in the last few years, and it is a great pleasure to have had Dr. Mitchell help us along in this department of prosthetic dentistry.

DR. MITCHELL (closing the discussion): I wish to express my kindest thanks for the very free discussion and consideration of my paper. It was only a little monograph and did not amount to much. In preparing it I thought it might start a train of thought in a new line, and I seem to have succeeded beyond my most hopeful expectations, and I have to thank all of you who have helped me out in eliciting ideas in connection with this subject.

Dr. Hunt has spoken in regard to the work done by Mr. Brewster and Dr. Reeves. I am only delighted to know that we have men who have been working along similar lines.

There is no question at all that the enamels spoken of and the effect produced by them will undoubtedly be better if diffused through a tooth from the back than if applied upon the front. There it is too palpable. It is possible to modify or to tone down these colors. It is interesting to note that Dr. Reeves and myself have worked on similar lines, although there is a slight difference in results. He had a better means than I had, although I did the best I could. He had something better and succeeded better than I did. But it is interesting to me to know that we are both working on the same lines. You are to be congratulated, gentlemen, on having some one like Mr. Brewster who can so intelligently carry out your suggestions and give you something that is so worthy of your consideration. I trust all of you will go in for this line of work and develop it to its highest possibilities.

The first efforts in this line I know of were shown me a few weeks ago by Dr. Kingsley, in New York. He showed a plate where he imitated deposits of tartar on teeth. He made the plate in 1846. That antedates anything I know of in this direction. It

was done by the use of a tooth body, and I imagine it was colored by uranium. There was a distinct change in color, and, as I have said, he imitated the ravages of tartar upon the gums, although it was not carried on exactly the same way that we have been considering the subject this evening.

I have been pleased with the remarks made by Dr. Perry, of a collateral nature, because he brought out some excellent points.

With reference to the remarks of Dr. Cigrand, as to the artistic side of prosthetic dentistry, there can be no doubt but what it has been neglected. He has also spoken in regard to the disadvantages of sending work out to dental laboratories. I know in some places in England we have to entrust lots of things to boys; and we sometimes call them boys up to thirty years of age there, and it depends upon how he enjoyed Saturday night or Sunday as to what kind of a case you will get Monday morning. These things do not work out well in practice. You may give instructions to people to do this or that, and delegate certain work to them, but when we consider the time taken in doing this, one may just as well, in many instances, do it all himself. The artistic side of prosthetic dentistry is not incompatible with good operating. One goes with the other, and the dividing line is hard to distinguish. As I have said, by the time you get through giving all your instructions, and watching and seeing how the work is being done, you would probably save time by doing it yourself. So I would suggest to some of you to do a little more of this work, rather than to entrust too much to others, and I assure you you will not lose anything from the standpoint of dignity.

There is one thing in regard to the matching of shades. Dr. Cigrand brought out the difference between shades and colors. As a rule, teeth are not colored, but shaded. A great many teeth on the other side are being manufactured that are colors and not shades. It is a great thing to be able to select the correct tooth, or nearly so. Unfortunately, a great many dentists are color-blind, and cannot come within several shades of selecting the right tooth, and that accounts for the great divergence we see in regard to the selection of individual teeth. In regard to these shades, there is such a variety of them made that it is almost impossible to go very far wrong, and I believe this was referred to by Dr. Nyman, who spoke in regard to the way in which he shaded the colors by grinding and making the surfaces more convex. There is a great deal

to be accomplished in that respect, and I do not hesitate to take a large tooth and grind it down to suit, sometimes making a lateral out of a central incisor.

Dr. Goslee's remarks were directed largely to the artistic side of this work, and there is no question about the moral effect of this kind of work upon both dentist and patient.

In regard to Mr. Brewster's statement about colors, I am very glad to know we have a high fusing color that can be put on the back and get the effect which we desire. It is a step in advance, and with some modifications the principle can be used in obtaining colors that will not be quite so intense as they otherwise might be. I shall experiment with them and find out their possibilities.

With reference to the remarks of Dr. Brophy, I am very glad to know that one of the deans of your dental colleges here has the time and desire to take up such an important feature of dental education as this, considering the multiplicity of things that he is called upon to consider. I am glad he has considered it in the happy light that he has, because I am sure it augurs well for the dental students of the future. It will be also a benefit to their patients. I am delighted that Dr. Brophy has looked into the matter sufficiently with his colleagues to take it up and make it an essential part of class work. It must be taught in dental colleges, and through them both the public and the profession will become educated.

Gentlemen, let us strive to do our best for the artistic side of our calling by having a good try at this work, and I am quite sure with the audience we have here as a nucleus, the success of it is assured.

Dr. L. H. Arnold read a paper entitled "Some Phases of Oral Hygiene."

DR. G. W. DITTMAR was asked to open the discussion. He said: Mr. Chairman—This is a surprise to me. I have not read the doctor's paper, and certainly did not expect to be called upon to open this discussion. The paper is indeed a good one, containing some new thoughts, and in a general way merits commendation. There are, however, a few exceptions that I might take, to certain points that were brought out. I am doubtless a flaw-picker. But I fail to appreciate in what way the application of paraffine to a tooth that has been thoroughly cleaned can do any particular good. I can hardly see how paraffine, when applied to the surfaces of the

teeth, will get in between the enamel rods so as to stay there any length of time after it is applied.

Regarding the term, curetting, as used in the paper, it seems to me a new one, although it may have been properly applied. I should have used the term scaling.

With reference to the toothbrush, this question was ably handled and undoubtedly at the present time we are at a loss generally to get good toothbrushes. It is difficult to get a toothbrush that will reach all parts of the teeth, and especially get into the interproximal spaces.

As to tooth powders, we need a powder that has a certain amount of grit in it to clean teeth properly, and one that has a tendency to stimulate the gums. We do not want anything that is not soluble or that would be irritating to any extent under the free margins of the gum.

I am sorry that I did not have an opportunity to read the paper and thus be able to discuss it more intelligently.

DR. L. O. GREEN: The paper was a very good one and we need more of such a nature. I was particularly interested in regard to the removal of the little scum around the gingival line. After I thoroughly scale and polish a set of teeth, I take a silk ligature and polish the proximal surfaces and carry the ligature high up under the gingivus. It is surprising the amount of decomposed food you will bring away in so doing. I think it is more of an operation than one realizes to properly scale and polish a set of teeth.

DR. ARTHUR D. BLACK: There is one point in the paper I should like to commend, and that is the matter of scrubbing the tongue. I believe that at least as much bad breath comes from accumulations on the tongue as from the teeth themselves, and I think if dentists, or others who do not do it, will try it, and give the tongue a thorough scrubbing every morning, they will find their mouths will feel much better.

I hardly agree with the essayist in regard to the use of antiseptics in the mouth. I do not think that an antiseptic in the mouth is going to hurt any one. In regard to the antiseptics producing atrophy of the cells that tend to combat the ingress of bacteria, that point was a little too finely drawn. I shall continue to use antiseptics in the mouths of my patients.

DR. D. M. CATTELL: I was very much interested in the paper of Dr. Arnold, because, as many of you are aware, I read a paper,

not very long since, on a similar subject before a neighboring society. Although Dr. Arnold has reached out into a broader field than I did, I was interested in many things he said, and I have only words of commendation for the paper as a whole. I would question the use of the word *cureting*. I do not understand the application of that term in scaling tartar from the teeth, or, may be, it is so new in the field under discussion that I am not familiar with it.

It would have pleased me more if he had dwelt at greater length upon dentifrices and the friction necessary to clean the teeth properly. It has been my habit, since I commenced the study of dentistry, to use for my own purposes any dentifrice I might happen to like the flavor of, and mix it with about one-half or the same amount of pumice stone, the finest pumice stone we can usually get in a drug store. I have used that, and very often pure pumice stone, for twenty-five years, and I do not think my teeth have been damaged in the least. I remember very well years ago this subject was discussed in dental societies and in dental journals, and some teeth that had been recently extracted were examined carefully under a magnifying power, and the character of the enamel noted. Carrying to the laboratory and brushing them for two hours steadily at the lathe with stiff brush wheels and pumice stone, such as was made use of in polishing vulcanite plates, etc., and examining them carefully again with magnifying power, it was noticed that the only effect the bristles and pumice had was to smooth the surface of the teeth or polish them a little, not wearing the enamel appreciably. Yet, it seems to me, that would be more brushing of the teeth than one would do with a toothbrush in a lifetime. I find it difficult to keep a collection of tartar from my own teeth with commercial tooth powder. Yet in twenty-five years, with the rough usage my teeth have had with gritty powders and no appreciable wearing therefrom, and my teeth are not harder than the majority, that I have had experience enough to justify me in saying that the commercial tooth powders have not the proper grit necessary to do the work intended for them.

I wish to compliment the writer of the paper and to say that it contained many excellent points which I could not entirely absorb during the reading of it. I shall hope to read it again when it is published.

DR. WILLIAM MITCHELL, of London, England: I wish to com-

pliment the essayist upon his paper, because it is one that affects all of us to a greater or less extent. There are one or two points I want to mention in regard to toothbrushes. I had a toothbrush brought to me by a Danish patient, and it is one of the best I have ever seen or used. I have been trying to think of the name of it, but it is one of those peculiar Scandinavian names that I cannot recall. The bone portion is an angular affair. There are only four or five rows of bristles, and the points of the bristles are self-supporting. One can easily get the bristles in between the teeth. The beauty about this brush is that it does not deteriorate like ordinary toothbrushes, which have so many bristles. In tapering it in this way (indicating), when it is inserted into the mouth, by slightly closing the teeth there is plenty of room to get around the third molar. I have found this toothbrush very efficient, and as far as I am able to judge it is the best brush I have ever used.

I have a great many children who come to see me about holiday time or just when they are about to go back to school, and I find it very difficult to impress upon these little urchins the importance of personal cleanliness in their care of the teeth. They come in with more or less debris about the teeth; the teeth are stained, and incidentally there is a bad condition of the mouth. The way I manage these little patients is this: I clean a central incisor for them as nicely as I can, and then, taking that as a model, I tell them to clean the others themselves. It is one of the best dodges I have hit upon, and when they come in the next holiday I find their teeth and mouth in a much better condition.

DR. ARNOLD (closing the discussion): Paraffine was mentioned as secondary to Dr. Hart's treatment. Dr. Hart's treatment is to apply the dam to a few teeth, previously polished with pumice stone and curetted. First, chloroform is used to remove all grease, then peroxide of hydrogen, and ammonia water after, and teeth thoroughly dried. Then paraffine is used after the idea of Dr. Bonwill, which was to use it around a filling in case there was a defect, to fill it up. The rubber dam being applied, the tooth is dried and treated as I mentioned. Paraffine is laid on a warm or hot instrument applied and the capillary attraction draws in the paraffine, and as it is insoluble, it stays there, especially in the deeper parts, and makes a permanent seal.

If the acids have attacked the enamel, the paraffine is placed all

over it and the deeper portions of the pits are filled up by the paraffine.

As to the term curetting, I am surprised that exception was taken to it. I believe in surgery all instruments which scrape are called curettes. This is the meaning given by the century dictionary.

The clean central incisor dodge mentioned by Dr. Mitchell is worthy of consideration.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held at the Victoria Hotel April 15, 1902, with Dr. E. J. Perry in the chair.

Dr. J. H. Woolley read a paper entitled "Suggestions for the Radical Treatment of Necrosed Bone."

DR. C. E. BENTLEY was asked to open the discussion. He said: Mr. President and Gentlemen—I assure you that I enjoy the rare distinction of being a guest of this society. I appreciate it very highly. I also appreciate very much the paper that Dr. Woolley has presented for your consideration, on account of its suggestiveness. He has intimated to us that possibly in a great many cases of so-called necrosis he would substitute therapeutical for surgical methods. I want to say that I have been more or less familiar with the case described, a cast of which has been passed around, for I saw the case at different times with Dr. Woolley, and I can attest to the effectiveness of what he claims in his paper. I think, however, that the paper has been a little bit confusing in its terms. I think that Dr. Woolley has mistaken a case of caries for necrosis, and that the case he cites was one of caries and not of necrosis. He states that it was a case of twenty years' standing. If it were a case of necrosis of twenty years' standing, not only the small area that is represented on the cast would have been destroyed, but the whole superior maxilla as well. There is a fundamental difference between caries and necrosis. There should be this distinction made: Caries is a molecular death of osseous tissue and necrosis is death of tissue *en masse*. If this had been a typical case of necrosis, I think the whole superior maxilla would have been involved instead of the small area represented in this case. Where we have sinuosity in caries I have no doubt but what the therapeutical method he has used is, in some instances, preferable to the surgical one.

There are certain causes for necrosis, and it seems to me they should be pretty well defined. We have different forms of necrosis, among them alveolar necrosis, phosphor necrosis, or necrosis which is found in people who work in match factories. Furthermore, we have mercurial necrosis, which follows the indiscriminate use of mercury in cases of syphilis. We have necrosis due to some of the fevers, such as diphtheria and scarlet fever, called exanthematous necrosis. There is also necrosis due to the noneruption of third molars.

I hardly think that the case that has been reported comes under either of those heads, and it is, in my opinion, an aggravated case of caries. In anticipation of this, I brought specimens of a case that came under my observation two or three years ago. The difference in the physical aspect between caries and necrosis, if once noted, is unmistakable ever after. The physical properties of necrosed bone are so different from those of caries as to be unmistakable when those physical differences are well placed in our minds. Carious bone can be gouged and scraped, and it leaves a white mark after you reach sound tissue. Necrosed bone may have a healthy appearance and yet in the region of the sequestrum there is disintegration going on which nature sooner or later casts off, separating the living from the dead. Caries of the bone under the steel probe has a honeycombed feeling, while necrosed bone may be firm.

I present specimens of a case of mercurial necrosis that came under my observation three years ago. A physician referred a woman to me, who had been treated indiscreetly by an ignorant practitioner. Mucous patches were still to be found in the mouth when she came to me, showing that she was suffering from the primary stage of syphilis. We know that in the tertiary and post-tertiary stages the bones are attacked. This woman had mercurial necrosis from ramus to ramus of the lower jaw, so that every tooth in this jaw was removed by my fingers, and the pieces of bone that came away were granular. I brought these specimens here to show you the physical characteristics of the necrosed bone that came away at the time, so different from that of caries that once the difference is fixed in one's mind it is unmistakable.

While I believe there are many cases in which we may resort to therapeutic measures instead of surgical interference, yet I must confess that, so far as I have been able to determine by operative

measures and by experience, I am led to believe that surgical interference is by far the more satisfactory, and, at the same time, is quicker in its action.

I showed Dr. Woolley a case not later than two weeks ago, very similar to the one he has exhibited to you, in which there was an alveolar abscess; caries had gone on for a year, around the incisor, spreading laterally to the cuspid and central incisor. The alveolus around the lateral incisor was disintegrated by caries; there was some pus; yet by using a gouge, opening at the apex of the tooth and curetting that part, going in there with a bur and cutting through to healthy tissue, the case was healed within ten days, with less trouble and less inconvenience to the patient, and certainly a far more rapid recovery. While I think there is a great deal of merit in what Dr. Woolley has said with reference to conservative treatment, yet, so far as I have been able to observe, my experience has taught me to prefer the surgical method. I want to say, however, that the successful treatment of this case commends to me the use of sulphophenic acid. I suppose Dr. Cook can give us some information in regard to its therapeutic action. I intend to employ this acid in the future in cases where I think conservative treatment is necessary.

Dr. Woolley has aided us considerably in devising and introducing the instrument he has exhibited, the fountain syringe. I believe it can be used to great advantage in getting at the sinuosities of which he speaks. I have used it with intense satisfaction to myself and to my patients, recommending to my patients, particularly those who have pyorrhoea, to use it in order to keep the pockets clean. I, for one, am very much pleased with the instrument, and I can see many places for its use in dentistry.

DR. GEORGE W. COOK: Mr. President—I certainly esteem it a great pleasure to be here with the members of this society. I knew something of the cases that Dr. Woolley had, and perhaps I was the first to suggest to him the use of this acid that he referred to in his paper. I used it in a number of instances previous to telling Dr. Woolley about it, but I was somewhat anxious to learn what the results would be in the practice of others.

It is sometimes difficult for me to remember the points in a discussion of this kind, and I thought if it took a certain turn I might present some agents that come to my mind in an experimental way.

The preparation phenol sulphonic acid is a combination of equal

parts of crude sulphuric acid and of crude carbolic acid, displacing one atom of hydrogen in the phenol with the sulphuric acid.

The distinction or differentiation between caries and necrosis, to which Dr. Bentley has referred, has attracted considerable attention. The line of demarkation between caries and necrosis has not been distinctly drawn, and it is difficult to say what is caries and what is necrosis—that is, to determine the line of demarkation between them, and I think the only difference we can say of them is simply the action of microorganisms in the part. Of course, where we have a slow, irritating agent, we necessarily have what is ordinarily termed caries of bone. A more active, infective condition, I should say, is usually termed necrosis. But it matters very little in my mind whether it is caries or necrosis, as the point Dr. Woolley has attempted to bring out in his paper is the best way to get rid of such a condition without surgical intervention. Unquestionably, many of these cases can be more promptly relieved or cured by surgical rather than by therapeutic measures, and it is possible that we will have to resort to surgical means in many of these cases. In other instances, however, conservative treatment is indicated and quite essential, and the mental condition of patients as regards operation must always be considered.

The use of sulphophenic acid I have not thought of in any way other than as an agent to be used where operations are performed, and its action in connection with operations is very beneficial.

I came to use this agent in the treatment of lumbar abscesses which were inoperable, and its use proved very successful. It was in such cases that I got my idea of its use in this particular way. It is not apparently a new agent, for it has been in use in foreign countries for many years.

Hueppe was the first to introduce it and use it in preference to sulphuric acid in diseased bone. He used it on a scientific basis, as he is a scientist as well as somewhat of a surgeon. He employed this agent on the principle that where we have diseased bone of any description we want an agent which will attack the microorganisms, and, secondly, in the case of bone, the use of an agent whose chemical reaction goes on, at the same time, within the diseased bone tissue. It is a strong antiseptic agent, and this made it popular apparently in the hands of other German and Norwegian surgeons.

There is no question in my mind but that surgical intervention could in many instances be dispensed with, at least a good deal of it,

if we could only find an agent that could be used efficiently in these cases. The question simply resolves itself into the matter of destroying germs, and this is a problem which is not very well settled even at the present time, as to how to get rid of them. Many of the agents that are used in a surgical way or in connection with the treatment of wounds are sufficiently irritant to keep up an irritative condition of the cells so as to cause necrosis or disease of the tissue itself without destroying the microorganisms. Until an agent of that kind is found, I think surgical means will be necessary; but the time may come when we will not have to use such heroic means in the treatment of many such conditions as Dr. Woolley has spoken of in his paper.

Recently there has been introduced a new antiseptic agent, but how efficient it will prove to be I am not positive yet, especially in conditions such as those under consideration. It is a chemical agent that has been worked out by a number of chemists; but Novy, of Ann Arbor, and Farrar, of the State Agricultural School of Michigan, are using it as an antiseptic. They call it benzoacetol-peroxide. A few years ago, when peroxide of hydrogen was brought to the notice of the profession, it was considered a very efficient agent in cases of caries and necrosis, and I have no doubt it is used quite extensively now by many because of its great oxidizing power, and it was thought at that time, owing to its oxidizing power, it was a great antiseptic. But experimental research has not proved the fact that it was a very strong antiseptic. The fact is that in the presence of microorganisms it has no antiseptic properties. Berstrom and Neff have taken up the work in regard to this new agent, and Neff has shown that it has wonderful bacteriological power. It destroys the vegetative form of the microorganism in a solution of one in three thousand in about a minute; while in the pure form it destroys the spores in the same time. I have done a little work with it. It has not been easy to get any of the agent because of the difficulty attending its preparation and the preservation of it. I have obtained a little from the Chicago University. One man down there has made some of it, and Neff sent me a small package. I have been experimenting with this agent, and I find that wherever decomposition of organic substance is going on, that is the place apparently for the use of this agent. We know that peroxide of hydrogen seeks out those places in which decomposition or pus formation is going on, even decomposition of

a milder form than that of pus formation; but this is still more efficient in seeking out small sinuosities to which Dr. Woolley referred. It will destroy them. If it is as destructive to micro-organisms in the tissues, as it is to them in the test tube, there is no question but that it will not be long before it will be a very efficient agent for the surgeon.

One of the things this agent is going to do, above all others, is to bleach teeth. I have not had enough of the agent to make many tests with it, but to my mind it will prove an efficient agent for that purpose, owing to its strong oxidizing power. This agent acts very much as phenol sulphonic acid does on bacteria, but more energetically. It seeks for decomposing particles of material, and of course that is one of the necessary things in an antiseptic which is used, and it is nonirritating. It can be taken into the stomach with impunity, and it will stop all decomposition products without interfering with the physiological functions of the stomach or of the intestinal tract. This cannot be done with the phenol sulphonic acid, because while it is a bland agent in a sense, you would not care to swallow very much phenol, or have it get into your intestinal tract, and consequently the other agent, the benzoacetolperoxide, will do away with the use of that, if it proves as efficient as I think it will. Parke, Davis & Co. are working on it; they are trying to get it out in a form to be used. One great difficulty is its explosive property. It is a yellow-like powder, and by shaking it or having it come in contact with the air it is combustible, and one is liable to blow up the patient if he is not careful. It does not stand heat of high degree. If it should be heated to boiling point, it is also combustible, and it is combustible in the sunlight.

I treated saliva with five drops of 1 in 3,000 solution, and failed to grow bacteria, after putting five drops in 10 c. c. of the saliva. Novy found the use of it in urine prevented a growth. He also found that he could do the same thing if he put it in the sun's rays, it being absolutely immune to the growth of bacteria.

There are a great many points in connection with this agent that have attracted my attention recently, and it may be some time before I will have a reliable report on the subject.

DR. C. N. JOHNSON: I do not like to let Dr. Woolley's paper go without some remarks. I feel like encouraging the essayist, and yet I cannot throw much light on the question as to whether we should operate or treat these cases therapeutically. It seems to

me that is a matter of judgment. I believe, as Dr. Bentley has said, there are many cases in which we will get better results by operation and relieve the patient more rapidly than by therapeutic treatment. But in this connection I recall the treatment of a case reported by Dr. De Ford, of Cedar Rapids, Iowa, in the *Dental Cosmos*. The case was one of extensive necrosis of the upper jaw. The patient was badly run down, and some practitioner had concluded to operate to save her life. The patient was visibly affected by the idea of an operation and was nearly in a state of collapse. The case subsequently came under the care of Dr. De Ford, who immediately informed the woman that she would not need an operation. By displaying this tact, it had a visible mental effect on the patient and her friends. Dr. De Ford thought that if an operation had been performed it would have resulted in the woman's death, partially due to the mental impression made and to the shock, and probably it would have been dangerous from another point of view. The removal of that extensive necrosis at the time would have exposed a large area of susceptible tissue to the attack of microorganisms, and under those conditions it would have been absolutely impossible to keep the microorganisms out; so that after the operation, notwithstanding all the care that might have been taken at the time, serum would have poured into the wound, microorganisms would have rushed in, and would have poisoned the patient to death.

Dr. De Ford's treatment was different. He opened the pulp chambers of all of the anterior teeth and left them open for drainage. He treated the case in a palliative way with antiseptics, built the patient up as best he could physically, and finally effected a perfect cure, leaving every piece of bone to come away of its own accord.

I am convinced from his recital of that case that it was the proper method to pursue in that particular instance; that an operation under those circumstances, with the tissues involved as they were in the upper jaw, would have been a failure. However, in some of these minor cases, I believe an operation is the quickest way to effect a cure.

Speaking of caries or necrosis at the ends of the roots of teeth, I had a case recently in which it seemed to me a minor operation was indicated. The case had been abscessed about three years; an upper bicuspid tooth was filled, and I had every reason to believe that the pulp canal was filled as perfectly as it could have been at

the time. In the tooth was a well-inserted gold filling. The patient was referred to me by her physician, who was certain that the antrum was involved. I examined the case and found the buccal root of the first bicuspid exposed to view, all of the bone gone around the apical third of it. Patient complained of heaviness on that side of the face. A description of the symptoms led one to believe that the antrum was already involved. On probing I found it was too far forward to involve the antrum without considerable penetration. The woman was much alarmed, and I relieved her mind as best I could. I took a bur, went in there (I did not have to make any opening because the root stood up in view), cut off the root, and when I picked the root out and laid it on the operating case, and told her what it was, she said, "If you had told me what you were going to do I should have fainted." I smoothed the end of the root off, burred out the bone slightly, and the case is progressing rapidly. This was a week ago and she is practically well.

Here was a case where a minor surgical operation was indicated. I could not have obtained that result by any therapeutical treatment, and so I believe, Mr. President, it is a matter of judgment.

DR. TRUMAN W. BROPHY: I think Dr. Woolley's paper is the first one we have ever had in this society on the subject of necrosis, so far as I remember. I appreciate fully the work Dr. Woolley has done and the value of the agents he and Dr. Cook have proposed.

I feel there is a wide difference between the two conditions, caries and necrosis, and while you may employ an agent in sinuses with a view to establishing as far as possible, a healthy circulation in the bone beyond the area of disease, to aid it in repelling or resisting the further advance of the disease, the bone that has already become dead or devoid of circulation and vitality will eventually exfoliate. There is a difference which exists between caries and necrosis which we should fully understand. If we have a case of necrosis we do not need to do much. Nature does the work, because in necrosis there is an overwhelming of the circulation in a certain area of the disease, followed by stasis, arrest of circulation, death. A tooth becomes carious through the action of certain agents and gradually breaks away. There is molecular destruction of that organ, beginning from without and progressing toward the center. There is a wide difference between caries of a tooth and

caries of bone. In a tooth the inorganic part of it first succumbs to the invasion of disease. It breaks down molecule by molecule; the living organic matter, the contents of the tubuli, etc., are the last to succumb and give way. This is verified in our efforts to excavate certain cavities in which we find most of the inorganic matter has lost its strength, and we find therein a certain semi-organized or living substance which is sensitive to the touch, perhaps remnants of organic matter of the part which have not yet become thoroughly devitalized. So in a tooth the inorganic matter is the first to give way, the first to be destroyed. That would be caries of a tooth. On the other hand, let a tooth be overwhelmed by the process of inflammation involving the pericementum, which undergoes a destructive inflammation, and we have a loss of that pericementum, and what is the consequence? Necrosis of the tooth, we might say. The entire tooth, pulp, cementum, all loses its vitality, and the tooth becomes a foreign substance. It is dead because the pericementum is dead. The tooth no longer receives nutrition from any source, either through the medium of the pericementum or pulp. So it is a foreign substance. It has undergone necrosis and nature will expel it. We do not need to do much. In all cases of that kind nature does the work and exfoliates the tooth. Just so in bone, except the difference in the process of the destruction of bone. If it be caries of bone we have destruction of the organic matter first. There is an insidious process of inflammation extending, first, over the periosteum or the pericementum, and around the tooth socket. The organic matter of the bone takes on inflammation, we have an osteitis, then a gradual breaking away of the organic matter and ulcerating out, so to speak. Pus forms, and works its way into the bone, deeper and deeper, until we may have the entire maxillary bones destroyed by this gradual process of decay. It is a molecular destruction there as in a tooth, but different from caries of a tooth. In bone we have a destruction of the organic matter first; in a tooth, the inorganic matter first. The organic matter of the bone ulcerating but little by little and gradually the inorganic matter breaks down molecule by molecule. This is caries of bone. In necrosis there is a quick overwhelming of the circulation; the circulation is arrested, stasis occurs, and a great mass of bone loses its vitality. It is done quickly. If we have a mass of bone that has lost its vitality, nature forms a line of demarkation between the living and the dead. The inflammatory

process ceases at a certain point, and at that point the line of demarkation is formed; and although the part in which the circulation stops dies, by the stimulation of the parts with an agent like sulphuric acid, diluted, or carbosulphuric acid, we stimulate the circulation in the healthy region beyond, and hasten the exfoliation of the dead bone. If the dead bone is held down by soft parts that overly it, the soft parts must be separated and the sequestrum removed. If it is in that condition, the agents are employed which will help to promote a healthy circulation in the territory and stop the advance of the inflammatory process, aiding us to more quickly produce an exfoliation of the dead part. In caries if we can remove the contents of the cells, of the lacunae and canaliculi, and all of the cancellated openings in the bony tissue, freeing it from the septic material there contained, we may possibly dissolve out the bony substance, but it is slow work to dissolve out bone which is devoid of vitality.

I have used sulphuric acid for a great many years. I believe it was in St. Bartholomew's Hospital, London, that a gentleman of the name of Richardson, away back in the early sixties or seventies, began to use sulphuric acid for that purpose. He did not claim particularly that the bone was dissolved by its action, but that the parts beyond were stimulated to resist the further advance of the carious process. I believe in employing always medication, when it is possible, to cure disease by that method; but when we cannot do this, then as a last resort we must operate. I would not advocate any operation in a case that I thought I could cure by medication. I believe that is the view held by the most conservative men, who have accomplished the best results for their patients by making use of remedies whenever it is possible to use them satisfactorily. But my observation has been that in cases of caries of bone, the disease will go on indefinitely. For instance, in my own experience, a man came to me with a sinus located over the lateral incisor tooth, and I was informed (this was more than twenty years ago) that he had trouble with his eyes, which came on slowly. He was sent to me for examination. I found I could introduce a silver probe through the alveolus of the lateral incisor and carry it back about three inches. I found the teeth were so loose that any of them might be picked out with the fingers. There was general destruction of the superior maxillary bones by the process of caries. The trouble, no doubt, had its origin in an abscess at the apex of the

root of the incisor tooth that was extracted subsequent to the inception of the disease. It was necessary to remove all diseased bone. The disease had progressed so far as to affect vision; and the man was nearly blind. The result of an operation which consisted in the removal of all diseased tissue helped, in a measure, to restore his vision, but he had never perfectly regained it. I would operate in cases where there is extensive destruction of bone, and where there was nothing to be gained by waiting.

I wish to take issue with the essayist when he says that to operate would result in marked deformity. It is remarkable sometimes what a large amount of bone can be removed from the face of an individual without changing his features, provided it is done skillfully without external incisions. The older I become and the more experience I have, the more I am convinced that 95 per cent of external incisions, for the purpose of removing tumors of the jaw and diseased bone, are wholly unnecessary. A good surgeon can take out the whole maxillary bone inside the mouth, without external incision, if he knows how to do it, and can do it with certainty of success. So I take issue with the essayist about these operations causing deformity and destroying the vitality of the teeth.

I made a statement before some society (I do not know whether it was this one or not) about how I once, probably twenty-five years ago, was talking with Dr. Allport on the subject of diseased bone. He had had a great deal of experience. I think he had had more to do with surgery than any one ever gave him credit for. He told me one day about a patient of his who had necrosis of a certain portion of the superior maxillary bone, which seemed to be located about the region of the cuspid tooth. The lateral incisor was involved. There was necrosis; a sequestrum had formed; he opened up the parts and took it out. The bone covered the root of the lateral incisor, extended beyond and involved the end of the root of the cuspid. The pulp of the lateral incisor was dead. When he took the bone out the membrane covering the root of the cuspid was very fresh and healthy looking, but the bone had died over the end of the root. He said he picked it off just as easily as he could take the glove off his finger. After this was done and the parts cleaned out, he said to the patient that if she had any more trouble he would open into the cuspid and take out the pulp which would be dead, fill the root and put the tooth in a good condition. Time went on, and the parts healed quite well after the diseased bone

was removed. The patient returned, he began to open the cuspid tooth and found it was sensitive. He could not believe it possible that the pulp of that tooth was alive, because of the nerve branch that came down to the end of the root and entered it as authorities tell us. He said he could carry his instrument all around the root of the tooth, so that it was a case where the circulation was cut off, but the pulp was not dead. I had an impression that he was mistaken. I went along for a number of years until I had a similar experience of my own. The patient was the wife of a professor of Greek in a university. She came to me with her face greatly swollen. I found a considerable amount of pus issuing from around the lower teeth, from molar to molar, involving all the lower anterior teeth, and there were sinuses, with pus escaping. The teeth were so loose that any of them could have been picked out with the fingers. I decided to try and keep the teeth in position, and so I made a platinum splint and fitted it over the teeth in the lower jaw, and cemented it on. I opened down into the bone a day or two later, and picked out necrotic bone. All teeth were adherent to the distal alveolar plate, but all of the bone on the anterior alveolar plate was dead. I took it all out, making an incision away down below the gum. The teeth were supported by the splint, so that they were firm. I said later I would have to remove the pulps of those teeth. The ends of the roots had membrane over them. Later I treated the case until the parts all filled in with granulations and the case was practically well. The splint was kept on for eight months, and then I took it off. The teeth were quite firm by that time. I decided to let them go for a few weeks. The teeth did not change color, but I decided to open them, because I feared there would be a recurrence of suppuration on account of the possibility of the pulps being dead. I found they were all sensitive, every one of them without exception, and they are sensitive to-day, the teeth being alive. Because one takes away the bone surrounding the end of the tooth root, it is not necessarily going to destroy the pulp, because the pericementum is the medium through which the pulp receives its nutrition and not from the branch of an artery given off for that purpose. Nor is the sensation received from a nerve branch given off from a trunk to enter directly into the apical foramen. That is just as clear to me as it is we are here at this table. After experience with such cases, I am convinced beyond the possibility of doubt that one of the greatest

fallacies on the part of anatomists is that teeth are supplied by branches given off from trunks. They are not; it is more through the medium of plexuses surrounding the root of the tooth which supply the tooth pulp with its nerve and little arteries.

The work of Dr. Woolley has done is commendable. I like the spray apparatus he has exhibited, only I would change its form and give it a little bend backward so that it will be more convenient for use. It might be bent at an angle of, say, forty-five degrees.

Dr. J. G. REID: In a case that came under my observation recently, I removed some necrosed bone, which extended from the cuspid to the central incisor. It was doubtless caused by an abscess which occurred at some time. It puzzled me a little, and I did not find out what it was until I had pulled the tooth out. But I found out there was necrosed bone. I removed the external plate of the alveolus extending from about half the cuspid to about half of the central incisor. The bone was necrosed one-eighth of an inch above the points of the roots of the tooth. It was scraped off and cleaned out. Since that was done, healing has taken place. The lateral incisor, after removing the plate of bone, became loose, and I endeavored to retain it there by ligatures, but it would not stay. At the same time, the parts about it were healthy. I removed the lateral incisor, which carried a crown, and after I did so I found some dentist had bored a hole through the root and had stuck a platinum pin outside of it. I could not tell before what the trouble was. Since I have done that I am not able to close the opening. A portion of the central incisor is exposed, that is, the root and tissues. I have stimulated the parts in various ways, but do not seem to be able to bring tissue to cover the root.

Dr. BROPHY: I would suggest that you cut off the end of the root.

Dr. REID: But the root is not dead.

Dr. BROPHY: Never mind; I would cut off the end of the root, then your cavity will fill up by granulations.

Dr. J. E. HINKINS: I enjoyed Dr. Woolley's paper very much, but I will not try to discuss it because it has been discussed from the etiology to all forms of treatment. I rise simply to say that I have used sulphophenic acid with some success, but I have not obtained as good results from using it so strong as the essayist has.

I have not used it stronger than a ten per cent solution, and I get better results from that strength than from a stronger solution.

With reference to the remedy spoken of by Dr. Cook, last September I was furnished with a bottle of it by Mr. Fay, of Detroit, and with a ten per cent solution of that I have obtained good results. It is a powerful bleaching agent. In abscessed teeth, where the agent has to be sealed up, I have not been successful with it.

Dr. L. L. DAVIS: I wish to say a few words in regard to the instrument which Dr. Woolley has shown us this evening. I have seen one of these instruments before he brought it here, and have used it once or twice. As I understand it, he desires that each patient who suffers from pyorrhoea should have one of these instruments in his or her possession, in order to aid the dentist in keeping the pockets and the interstices of the teeth absolutely free from particles of food or matter.

The only thing I would add to the suggestion of Dr. Brophy in regard to the change of angle of the face would be an extension of the face, probably three or more holes, and a point that can be readily removed, so that the syringe can be filled without waiting five minutes for it to be drained through the fine openings; simply a telescope, one part down on the other, with a pin on the solid portion, and an inclined groove, so that in getting down to a certain point a twist would draw it tightly into place, and there would be no back-action of the syringe which would drive the fluid into the mouth. It is an excellent instrument, and if any of you will use it once or twice you will find it of great service.

Dr. WOOLLEY (closing the discussion): I do not know that I have anything in particular to say in closing. I do not know whether it was necrosis or caries that I was treating, for the reason that I did not put the necrosed bone under the microscope. The disease was there, and I wanted to get at the best way of treating it. So, at the suggestion of Dr. Cook, who has been interested with me somewhat in these cases, and to whom I am much indebted for advice, I used sulphophenic acid. There was a pipe-like form of necrosis under the two bicuspid and molars beyond, and I did not dare to curette, cut out, gouge out or chisel away the bone because I feared the death of these teeth.

As regards the loss of bone not disfiguring the face, I have noticed that in cases of considerable necrosis that the original outline of the face is hardly ever restored perfectly.

I wish I could talk intelligently upon some of the theories of Dr. Loeb in regard to the action of certain medicinal solutions upon cell life and their power to reinvigorate, whether through electrical processes or what-not. Whatever the process is, there may be some suggestion in the idea that we are yet on the threshold of knowledge of how medicines will act on tissues, and whether or not living bone, treated in a therapeutic sense, may not reproduce secondary bone formation, stronger and better, and have more vitality to withstand or resist the diseases to which tooth structures are liable than by instrumentation.



I did not speak of the difference between caries and necrosis, but simply showed the action of the therapeutic agents upon diseased tissue.

The instrument I exhibit to-night I have termed a fountain tooth spray. It has proved very effective among my patients in keeping the teeth perfectly clean, by forcing foreign matter from all the interstices.

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SYSTEM AND ORDER IN THE DENTAL OFFICE.

It is beyond belief that men practicing dentistry should fail to realize the necessity for preserving order in the conduct of their work if they are to accomplish as much as they may. The very nature of the occupation is such that it demands one of two things—either system or chaos. There are so many instruments and appliances, each for its own particular purpose, that to keep them promiscuously strewn about means confusion, and worse than this it means a most serious loss of time.

Would you go into any ordinary machine shop and expect to find the tools scattered about in utter disregard of where they properly belonged? And if you did, would you expect to have a piece of work turned out of that shop with any degree of accuracy or promptness? Would you have confidence that anything a slovenly and disorderly machinist did would be done in the most perfect manner?

And yet to go into many of our dental offices, where more tools are used than in the average machine shop, one would think that an earthquake had recently gone along and shaken things together. Think of the waste of time that would aggregate from a computation in all the dental offices where untidy methods prevail. And then think of the impression on people of discriminating taste who take a seat in a dental chair where the floor is littered with waste cotton and other refuse, and where the operating case looks as if it had just passed through an attack of the blind staggers. Does such a condition of affairs tend to establish and maintain a liberal patronage?

It would not be so bad if the lack of system was confined to the older men, who grew up in the profession at a time when professional requirements were not so exacting as they are to-day, but for the younger men to exhibit carelessness in this respect

has a tendency to lower the general tone of the profession, besides being a perpetual handicap to the individual himself.

Be tidy, neat and systematic, and you will not only create a good impression on others, but will advance immeasurably in your own self-esteem.

THE ODONTOGRAPHIC SOCIETY—FIFTEENTH ANNIVERSARY.

The Odontographic Society of Chicago will hold its fifteenth anniversary next February, and while the date seems a long time ahead, yet it is none too long for the profession to prepare for such an event as this promises to be. It will be a two days' meeting, and will consist of papers of unusual excellence and clinics on every possible kind of operation in dentistry. The various committees have been hard at work for several months and everything looks most promising for the greatest meeting of a local society ever held. This society has a larger membership than any local dental society on the continent, and it is composed of active, energetic men, who never conduct society events in any half-hearted way. This time the entire membership are determined to make the coming meeting a most noteworthy occasion, and all they ask is for the profession to turn out in goodly numbers and be entertained. Midwinter clinics in Chicago have been uniformly successful in the past, and this one promises to so far outstrip all previous ones as to be in a class by itself.

We will keep our readers fully informed on the progress of the meeting from time to time, and will publish the program as soon as it is completed.

DEPARTMENT OF PRACTICAL HINTS.

The DENTAL REVIEW begins in this issue a department devoted to practical ideas. The articles will be short, crisp, and eminently practical. They will be of especial service to the busy man who asks for the meat of the matter at once without any theorizing. Each issue will contain a sufficient number of these hints to furnish something of value to every practitioner, and in the course of a year they will represent a most valuable fund of practical knowledge, well calculated to aid a man in the better performance of his work. It seems to be the order of the day to demand something which may be made immediately useful, and it is to this end that the department is inaugurated.

THE FOURTH INTERNATIONAL DENTAL CONGRESS, ST. LOUIS,
AUGUST, 1904.

The National Dental Association at Niagara, July 28, passed a resolution inviting the committee of the Federation Dentaire Internationale, having in charge the promoting of the Fourth International Dental Congress, to hold this congress in St. Louis, August, 1904, during the Louisiana Purchase Exposition, and elected Drs. Truman W. Brophy, Chicago, Wm. C. Barrett, Buffalo, and Eugene H. Smith, Boston, as envoys to present this invitation to the federation at Stockholm, August 15.

Another resolution was passed that the president appoint a provisional committee of fifteen to take charge of this proposed congress, subject to the acceptance of the invitation by the federation, said committee to have full power to organize and conduct the congress. In the event of the acceptance of this invitation by the federation said committee to be forthwith clothed with full power to commence and continue the work of organization and to bring to a successful ending this proposed congress.

A cablegram received by the committee the 18th of August states that the federation have accepted the invitation and the committee appointed by the president will soon begin the work of preparing for the largest dental meeting in the profession's history.

The following constitutes the committee: From the East: Edw. C. Kirk, Philadelphia; R. H. Hofheinz, Rochester, N. Y.; H. J. Burkhart, Batavia, N. Y.; Wm. Carr, New York; Waldo E. Boardman, Boston. From the South: V. E. Turner, Raleigh, N. C.; J. Y. Crawford, Nashville; M. F. Finley, Washington; J. W. David, Corsicana, Tex.; Wm. Crenshaw, Atlanta. From the West: Don M. Gallie, Chicago; Geo. V. I. Brown, Milwaukee; A. H. Peck, Chicago; J. D. Patterson, Kansas City; Burton Lee Thorpe, St. Louis.

BIOGRAPHICAL SKETCH.

VII.

HORACE H. HAYDEN, M. D., ARCHITECT—GEOLOGIST—DENTIST
—ORGANIZER—PROMOTER AND “FATHER OF THE AMERI-
CAN SOCIETY OF DENTAL SURGEONS.”

BY BURTON LEE THORPE, D. D. S., ST. LOUIS, MO.

Horace H. Hayden was born October 13th, 1769, at Windsor, Connecticut, of honorable and Christian parentage. He was *not* born of obscure or poor parents, as stated by previous biographers. His ancestor, William Hayden of Connecticut, 1630, won special mention for gallantry in the official report of his captain, Johnⁿ Mason, whose life he saved in the Pequot war of 1637. He settled at Windsor, Conn., 1642, where he bought land, and also received land from the colony of Connecticut for his military services in the Pequot war. That land the family still own, having held it now for 260 years. William Hayden's eldest son Daniel was a lieutenant in the Colonial service and a member of the General Court. His commissions as lieutenant are extant. Lieutenant Daniel had also an elder son Daniel, who was likewise a member of the General Court of Connecticut. His eldest son, the third Daniel, was also a lieutenant in the French and Indian war, and for his day a rich man. The house he built and lived in still stands at Hayden Station, Connecticut, having been erected in 1740. Lieut. Daniel, third, had an eldest son, Thomas Hayden, who was a builder and architect and father of Dr. Horace H. Hayden, and who served for seven years in the Revolutionary war, sergeant at the Lexington Alarm, 1775; sergeant major, second lieutenant, first lieutenant and adjutant. His service extended from 1775 to 1778 and 1780 to 1783. When the Revolutionary war ended Lieutenant Thomas Hayden had lost much, but still held his *land* and his *business* and it was from *his father* that Dr. Hayden learned his business of architect and builder. His early training was from his mother. He had an honored ancestry. His mother was Abigail Parsons, descended from one of the brainiest families in New England. Born 1769, he was a boy during the Revolution, and all the men being in the army, he and his mother harvested the crops and attended to the farm. Every ancestor he had in this country was a member of the Christian Church. Rev. John Warham, the first clergyman in New England and the ancestor of the Edwards, Burrs, Parsons

and others, was also his ancestor, and as his mother and father were cousins the hereditary gifts of both lines united in him to some extent.

During his boyhood he exhibited a remarkable liking for natural history, often surprising his friends by his ingenuity and success in discovering objects of interest while rambling in the woods. At the age of 10 he began the study of the ancient languages, in which he became quite proficient. At the age of 14 he worked his passage as a cabin boy on a brig to the West Indies, making two trips. After this he returned to school and to his books and studies of nature, until at the age of 16, he learned the trade of carpenter and architect from his father.

Young Hayden was studiously inclined and whatever he undertook he worked at with a will. With characteristic ardor he diligently applied his mind to his new employment, reading such books on architecture, both modern and ancient, as he could procure. As a result of this application he left many writings and drawings as evidence of the knowledge and skill he possessed in this art.

At the age of 21 he again sailed for the West Indies, seeking employment in his business, and located at Point Petre, Guadaloupe, but after a brief stay, an attack of the periodic fever compelled his return to his native land, where he remained until the following year, when he returned to the West Indies, but was again forced to return to Connecticut by the pestilence.

For several years he continued to follow his vocation as architect. At the age of 24 he left his native home and went to New York, remaining there during the spring and summer of 1792. Meeting with but little success, he returned to Connecticut and taught school near Hartford during the winter. Returning to New York, he called on Mr. John Greenwood, dentist, for professional service. He greatly admired Greenwood's skill and, while under treatment, he concluded to adopt that calling and to devote his time and energy to dental surgery. He immediately procured from Greenwood the few books and essays on the science at that time accessible—the best being the work of John Hunter. Leaving New York, he traveled to Baltimore, arriving there in 1800 (1) without

Horace H. Hayden was licensed to practice dentistry in Maryland by an examining board created under an act of Assembly for the State of Maryland in 1798. The board was not, strictly speaking, a dental board, but created under an act regulating the practice of medicine and surgery.



H. H. HAYDEN, M. D., PRESIDENT OF THE AMERICAN SOCIETY
OF DENTAL SURGEONS.

friends or fortune and with but an imperfect acquaintance with his new calling, but possessing plenty of native ability and imbued with energy and ambition to excell in his art. He rented a room in a frame house on the corner of Fayette st. and Charles st., and announced to the public that his services were at their command. His natural earnestness and aptitude quickly attracted attention and he was soon actively engaged. He used to teach a class in dentistry and thus began the first steps towards the college which Harris and he evolved from their work. He persuaded his brothers, Anson B. Hayden of Savannah, Ga., and Dr. Chester Hayden of Windsor, to study dentistry, and both became almost as eminent as he in the profession, though neither wrote or touched other lines of study.

To better perfect himself in his specialty he studied anatomy and medicine, acquiring much knowledge in these sciences and thereby gaining the respect and good will of the medical profession, whose confidence in him was shown in later years, when, without solicitation, the honorary degree of *Doctor of Medicine* was conferred on him by both the Jefferson College of Medicine of Philadelphia and the University of Maryland, 1837.

When the British attacked North Point, Maryland, 1814, Hayden enlisted as sergeant in Captain Warner's company of militia and served through the action, when medical men being in demand, General Samuel Smith, knowing his skill in surgery, ordered him to the hospital as assistant surgeon, where he served caring for the wounded until no longer needed. He came of a martial family, every Hayden ancestor having been a soldier.

Hayden rose rapidly in public confidence. He became associated with the most celebrated physicians and medical teachers in Baltimore and his opinions were listened to with respect and his suggestions frequently adopted. He was the first to give the profession caste in Baltimore. In 1825 he accepted an invitation to deliver a course of lectures in dental surgery to the medical class of the University of Maryland, an honor never before conferred upon any practitioner of dentistry in the United States. He contributed many essays on dentistry and medicine to the medical journals.

He delved into physiological and pathological research, making new discoveries, especially investigating the use and functions of the thyroid, salivary, lachrymal and other glands of the human

system, thus showing his acuteness of mind and experimental abilities. Having attained personal success and secured a professional standing he was anxious to improve the standing of his profession in general. He first advocated a union of dental practitioners into an association for mutual improvement in 1817, but this was not effected until August 18th, 1840, when in New York City assembled L. S. Parmly, Elisha Baker, Eleazar Parmly, Patrick Houston, Enoch Noyes, Vernon Cuyler, John Lovejoy, Chapin A. Harris, Jahial Parmly, Joseph N. Foster, A. Woodruff Brown, C. O. Baker, J. Smith Dodge, and Solyman Brown, who actively aided him in founding the American Society of Dental Surgeons, and he was chosen its first president, continuing in that office four years, until the date of his death.

At the birth of this society he remarked that the formation of a national society of dentists had long been a favorite project with him and that he had not been alone in this desire. Many years ago he had consulted the elder Hudson of Philadelphia, who was favorably inclined to such an association. On a visit to Boston and the Eastern cities he consulted his professional brethren and found them ready to co-operate in any practicable scheme to elevate the profession. He said that forty-three years ago the name of dentist was a reproach and a by-word, and that he had resolved to improve and exalt the profession so that it was not a disgrace to be called a dentist. From that time he had seen the science assuming more importance in the public eye—men of learning, worth and genius being added to the ranks of its professors from year to year. "At the present period," continued the speaker, "renewed efforts are making in England, France and Scotland to place our profession on still higher ground than it has yet attained; and shall we of these United States of America remain inactive in this grand endeavor? If, like the Jews, we are scattered and despised, may we not, like that persecuted people, at least hope for a day of restoration to our promised land! There are indeed many obstacles still to overcome!

"A new race of Canaanites must be expelled from our borders. Many errors must be exploded and much ignorance must be dispelled before the light of truth will beam clearly upon our path; but with diligence, zeal and perseverance we are certain of ultimate success.

"Let us, therefore, go forward in the good cause, unintimidated

by the skepticism of the faithless, the fears of the timid, or the apathy of the selfish. If there are some who prefer to plod onward in the path of private enterprise, let us unite our efforts in one great social endeavor to elevate our profession from the degraded condition to which it has sunk, and in which it must ever remain until the high-minded and well educated amongst its practitioners shall unitedly arise and shake themselves from the dust."

At the next meeting of the society in 1841 he was instrumental in organizing, with the aid of his confrères, the American Journal of Dental Science, the first dental journal ever published.

With the aid of his friends and colaborers, Drs. Chapin A. Harris and Thomas E. Bond, he formulated and founded, 1839, the first institution dedicated to special dental education in the world. The Baltimore College of Dental Surgery, of which he was, at the age of 70 years, the first president and first professor of *Principles of Dental Science* and later Professor of Dental Physiology and Pathology, serving in that capacity until his death. The establishment of this college met with bitter opposition from many sources, and it was predicted by many that its success would be short lived, but the zeal and conscientious efforts of Hayden and Harris made it the success they had hoped for. Long before 1841 Hayden said "mechanical and operative dentistry" was "not, in strictness, the indispensable requisite qualification of a dental surgeon." He believed that the dentist to be qualified in his profession should be thoroughly educated in the science of medicine. As a token of professional and personal merit he was created an honorary member of the Virginia Society of Surgeon Dentists, October 11th, 1842.

February 11th, 1842, Hayden was granted a patent which has been entirely overlooked by his early biographers, but which he atoned for in his later years, as at the time of its issuance it was not considered unprofessional. His claim was "preventing caries of the human teeth and the exclusive privilege of using and rending the empy-rheumatic oil (tar or balsam) and acid obtained by distillation of wood, which oil or acid, when properly modified, proportioned and applied, is used for the purpose of counteracting decay in human teeth, and the diseases consequent thereto, and to the human mouth." For this remedy Hayden claimed "*antiseptic properties, which counteracts caries, allays pain and irritability of the*

vessels of the teeth and mouth, lessens morbid sensibilities and arouses and restores a healthy action."

Besides being a pioneer dentist, Dr. Hayden was a pioneer geologist. All through his career he was constantly examining mineral peculiarities, the result of that love for nature which was developed in his early youth when living on the banks of the Connecticut river. He was far ahead of his age in his scientific discoveries. There were then very few geologists in the United States. He collected a valuable cabinet of American minerals which in 1850 became the basis of the complete collection of Roanoke College, Virginia. So limited was the literature of geological science in English that he was compelled to master the French language to be able to read the best books on Geology, from which he made many translations.

In 1821 he published an interesting work of 400 pages entitled "Geological Essays," the first general work on geology printed in the United States, and dedicated to his personal friend, Judge Thomas Cooper of Pennsylvania. He discovered a new mineral which was named *Haydenite* in his honor.

He was a botanist of no mean attainments and wrote on silkworm culture, vocal culture, etc. He was also a great sportsman, and with gun and rod he excelled. He married, February 23d, 1805, at Baltimore, Md., Maria Antoinette Robinson, daughter of Lieutenant Daniel Robinson of Baltimore, a United States revenue officer, who had served in the Pennsylvania navy during the Revolution as lieutenant and quartermaster, and had succeeded John Dickinson as a member of the finance committee of Delaware in 1777, a man of fine character and family. He married in the south and there all his children were born. They were: Eliza Lucretia, Handel Mozart, M. D., D. D. S.; Edwin Parsons, lawyer; Horace William, merchant, and two others who died in infancy.

Dr. H. H. Hayden died Friday, January 26th, 1844, at Baltimore, Md., aged 75 years, and was buried in Greenwood cemetery, Baltimore, where his remains still lie in the family vault. Forty-four years of his life were spent in the active practice of his profession. Hayden had a prophet-like mind that foresaw the result of great enterprises. His keen intellect and foresight has made him a hero of our profession. To his last breath he spoke with love and praise of his students and the profession he did so much to advance and improve. He was a diligent student, a deep and

independent thinker, eminent as a scientist in Europe and America, and an excellent teacher for fifty years, far in advance of his day. He was a God-fearing and truly scientific man, loving knowledge for its own sake and was an honor to the profession that honors him. Time may erase his fame as practitioner, author and scientist, but his name will ever live as *father of the American Society of Dental Surgeons*.

DOMESTIC CORRESPONDENCE.

MY DEAR EDITOR :

I have not language enough to express fully my enjoyment of a quiet hour with a number of THE DENTAL REVIEW. Each time I feel like saying: "Well, this is the best yet—a red letter number." And then I reflect that possibly my special attitude toward the Chicago magazine is in part accountable for my unusual enjoyment. It is to me a voice, or rather many voices, from the old "stamping ground," that come to me across the plains and over the mountains to this far-away corner, where now and then I have a little of the lonesome feeling; fortunately, however, with little time to indulge it, so it never assumes serious proportions. But it is so good to have reports of the meetings of those dear old societies I have known so well.

As I read, I seem to hear the voice of each speaker, just as it used to sound, with every intonation and accent. One gets so much more from the reading of a paper or a discussion by knowing quite well the writer or the speaker. This is a strong argument with me in urging young men to become members of associations. Some imagine, and say, that they "can read the reports of a meeting and get it all;" but this they cannot do. They would get a great deal more—an inestimable addition—by knowing the men whose productions they read.

But the July number of the REVIEW was certainly a little richer than usual in the number and quality of its good things. What a treat it was to read the article by Dr. Taft on "The Power of Association;" what a comfort to know that the force and vigor of his thought continues unabated. How we cling to and revere those splendid pioneers of dentistry who are yet spared to us, and how we treasure the memories of those who are gone.

And what can I say of the discussion of that paper by Drs. Black, Brophy, Swain, Chittenden and Tileston, only that I enjoyed and approved every paragraph. I have written Dr. Swain that I did not know that he was so much of a poet as his illustration of the flowers would indicate. That alone was worth a year's subscription.

Speaking of Dr. Tileston I am reminded of an expression that was new to me, and very apropos, employed by a young dentist from Kentucky; said he, "I tell you suh, you'd ought to know Tileston; he's just one o' them *nevah-failahs*." "Nevah failah" is good, isn't it? Does it remind you of some you know, Dr. Cushing, for example? who never failed to be present at a meeting of the Illinois State Society for a period of, I think thirty-three years, from the time of its organization till he came to California.

Going on through the number, I was interested much in Dr. Davis' paper and the discussion on "Pyorrhea and Prehistoric Man"; they had it, sure. There's "nothing new under the sun," except "new remedies" that are coming out every week.

Dr. Cattells' paper was a forceful presentation of facts well known that we are apt to forget occasionally, and of which we can hardly be reminded too often.

Dr. Sage's intimation that the dentist is likely to be successful according to the ideals he cherishes, brought to mind the words spoken of those who "pray to be seen of men," "verily I say unto you, they *have their reward*."

But the "amoosin" thing, to borrow a spelling from Artemus Ward, was ye editor's soliloquy about the weather. In the middle section, of which Chicago is the center, Pluvius seems to have gone out of the retail business entirely. From all accounts it is wholesale or nothing. Last year, when I was East, it was wholesale dry. This year Mr. F. F. Browne, of the *Dial*, writes me—"You never saw anything like it; I never did before. It simply rains *all* the time. Rather bad calculation, as it seems to me. I have not observed that Lake Michigan was particularly in need of moisture."

And then *hot*, with the humid; and *cold* with the wet. It is difficult for us in Southern California to realize that such things *are*, anywhere. Our weather has been a daily and hourly panacea for homesickness. But I must not elaborate on this. The editor

is getting suspicious of me. Drew the line on my story of a tomato vine twenty-five feet high, which I offered to show him if he would come out. But my tomato vine is no taller than his weather philosophy. Both show what may be done with plenty of water, rain or irrigation.

Not quite so pleasant is that "discooshin wid sticks" over a recently published book on orthodontia. I fear it is the same old story, or two of them together: 1. A book with little excuse for being. 2. A reviewer not too familiar with the subject and imposing on his own good nature to say pleasant things.

Is there much doubt that if nine-tenths of books remained unpublished the world would be the gainer by their loss?

Sincerely yours,

GARRETT NEWKIRK.

LOS ANGELES.

P. S.—Since the above was written we have had a visit from Dr. Angle, of St. Louis, who is spending a part of his vacation in Southern California. For this is a summer as well as a winter resort. He gave an illustrated lecture on "Art in Its Relation to Occlusion," to many dentists and several physicians, a lecture which was very instructive and highly appreciated.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The DENTAL REVIEW, 55 State St., Chicago, Ill.]

Hemorrhage of the Gums.—If the gums bleed freely when preparing roots for crowns or after removing gum tissue from deep cavities, apply adrenalin chloride 1:1,000.

R. C. GEBHARDT, Black River Falls, Wis.

A Hot Weather Cement Slab.—Keep a bottle, with broad, smooth surfaces, filled with water and by using it as a mixing slab it is found that the normal setting properties of the cement are preserved.

G. H. MADILL, D. D. S., Chicago.

Sensitive Necks of Teeth.—Make an application of a saturated solution of the carbonate of potassium in glycerine. We do not know who originated this treatment, but it has proved very effective, and it does not discolor like the nitrate of silver. Apply as often as seems necessary till sensitiveness is relieved.

Nitrate of Silver.—Nitrate of silver on the margins of cavities will help to prevent the recurrence of decay, although it may cause a dark line around the filling. If nitrate of silver is used in cavities in posterior teeth care should be taken not to apply too near the pulp as it may endanger the life of same.

R. C. GEBHARDT, Black River Falls, Wis.

Punching Holes in Rubber Dam.—To cut holes in the rubber dam perfectly round and symmetrical without the aid of a punch take the round handle of an excavator or other similar instrument and stretch the dam over the end, then with a sharp knife nick the dam against the side of the handle near the end. This will cut out a round piece from the dam. The size of the

hole may be regulated at will by the distance from the end of the handle at which the nick is made. If immediately at the end the hole will be exceedingly small but the farther removed the larger the hole. This process is quicker and more convenient than by the use of the punch, and it is capable of as great precision when the operator becomes accustomed to it.

Pulp Extraction.—In mesial root canals of lower molars where difficulty is experienced in inserting and rotating the broach, fit a short one in the right angle handpiece and have the assistant turn the engine belt slowly by hand. This will be found more convenient to the patient than the methods usually employed.

G. H. MADILL, D. D. S., Chicago.

NOTE.—Would like Dr. Madill to describe a convenient method of fastening the broach in the right angle.—[Editor.]

A Handy Weight for the Rubber Dam.—If the rubber dam folds up in the way of the operator seize it with the clamp forceps, twist the forceps several times and let it hang as a weight. This is the most convenient thing at hand because it has been used only the moment before in applying the clamp, and, in the absence of a regular weight is quite effective in keeping the rubber out of the way. The clamp forceps should not be allowed to rest against the chin as this is very annoying to the patient.

Sharpening Lancets, Excavators, Etc.—Disks made from emery paper Nos. 00 and $\frac{1}{2}$, an inch and a half in diameter, are placed in alternate layers to about a quarter of an inch in thickness upon a disk made of tin slightly smaller in diameter than the emery disks and mounted on a screw mandril. The tin disk serves to hold the paper disks flat while sharpening the instrument. Place the mandril in handpiece and hold it with the left hand, leaving the right hand free to apply instrument to be sharpened in contact with the coarser grit to trim instrument to desired shape. Tear off this disk and finish the sharpening upon the finer grit. A keen, even edge can be given to the instrument in a very short time in this way.

F. J. PATTERSON, L. D. S., Mendota, Ill.

Sensitive Buccal and Labial Cavities.—Adjust the rubber dam and retain it in position with a suitable clamp. Dry the cavity with absorbent cotton and flood it with Justi's cement liquid, allowing the liquid to remain for twenty or thirty seconds. It is sometimes necessary to repeat the application using a small pledget of cotton dipped in the liquid, wiping out the cavity thoroughly and flooding again, allowing the liquid to remain while the cavity is being prepared in the usual way, with a sharp bur or excavator.

F. J. PATTERSON, L. D. S.,
Mendota, Ill.

Save Your Disks and Finishing Strips.—The sandpaper disks and strips used for finishing gold fillings may be made very profitable if carefully preserved. All such disks and strips should have vaseline on them before using, and this will collect and hold the fine particles of gold, so that when worn out the disks and strips may be saved and sent to a refiner. It is as easy to throw them into a convenient receptacle for this purpose as it is to toss them into the waste basket, or, worse yet, on the operating room floor as many operators do. Where much gold filling is done the saving in the course of a year will astonish those who have not tried it.

Method of Taking a Bite for Full Upper Dentures.—Obtain a plaster model of the upper jaw and adjust wax base plate in the usual way. Place a roll of wax on the surface of the base plate corresponding with the alveolar ridge and high enough so that when placed in the patient's mouth it will be even with the lower border of the upper lip at the median line. The wax should be trimmed in such a manner that all of the lower teeth will touch it at the same time. This wax when hardened keeps the jaws the proper distance apart. Another layer of wax should now be added, and kept soft to take the impression of the cutting edges and occlusal surfaces of the lower teeth. After the base plate with wax attached is placed in the mouth the patient is requested to *close* the jaws. The hard wax will act as a stop and prevent the patient from bringing the jaws too close together, while the soft wax, which was added later, will take the impression of the lower teeth in its proper relationship to the upper jaw. It has been found in a large percentage of cases that

the cutting edges of the upper central incisors extend somewhat below the upper lip when it is in its normal position, and also outside of, and below, the cutting edges of the lower incisors. This will bring the cutting edges of the lower incisors about even with the lower border of the upper lip when the mouth is closed, and the wax which is used to keep the patient's jaws the proper distance apart should be even with the lower border of the upper lip.

Setting a Banded Crown Painlessly.—When the parts are dried take a small probe and dip it in carbolic acid ninety-five per cent, then pass the end of the probe under the free margin of the gum, and carry it around the root so that the acid comes in contact with the surface of the gum touched by the band of the crown. This will not only anesthetize the gum and peridental membrane sufficiently to permit the band to go on painlessly, but it will sear the gum over so as to prevent to a large degree the seeping of moisture between the gum and the root. After setting the crown bathe the gum surrounding it with alcohol, to neutralize any permanent effect of the carbolic acid—particularly if too much has been used or it has touched the gum some distance away from the crown.

Moulding Sheet Basewax.—To construct a mold secure two boards (any seasoned hardwood) five-eighths to seven-eighths thick, four inches wide, twelve inches long. Bevel each board upon one edge, lengthwise of the board. Cover each board upon beveled side with sheet tin, carrying tin over the beveled edge and tack to place. Secure four strips of brass or other metal one piece eleven inches long three pieces three and one-half inches long, all of which are to be one-quarter of an inch wide, and as thick as baseplate. Place the long strip lengthwise of one of the boards one-quarter of an inch from lower edge of tin. Fasten in position with solder or screws, and place the shorter two strips at either end at right angles to the long strip, the third strip to be placed midway between the end strips and parallel with them. Secure short strips in position.

Place the two boards with tinned surfaces approaching each other, and upon the lower edges place two brass hinges. The

mold is opened and the tinned surfaces amalgamated to prevent the wax adhering to them, and all surplus mercury removed with a cloth. Close the mold and with a pair of small iron clamps, or two blocks of wood cut out in form of a clamp, the mold is held in position, and ready to receive the heated wax poured into the beveled space. Two sheets of wax may thus be made with one pouring, and the mold opened the moment the wax is cooled. Pure beeswax may be used with the addition of a few drops of spirits of turpentine to regulate its toughness.

F. J. PATTERSON, L. D. S., Mendota, Ill.

Inserting Temporary Stoppings.—After the cavity is prepared for the filling, whether for sealing in dressings or for more permanent work, the stopping is warmed sufficiently to make it soft and placed in the cavity with the ordinary instruments. A pellet of cotton previously prepared by rolling tightly is now grasped with the pliers and pressed against the filling. The yielding cotton will cause the stopping to spread laterally and fill all parts of the cavity, and does not adhere as a hot instrument would.

This method will apply to cement and amalgam fillings as well as the preparations of gutta-percha, and the surplus amalgam and cement can be readily dressed off with cotton in this way.

J. W. JOHNSON, D. D. S., Chicago.

MEMORANDA.

CORONATION ODE.

Morning auspicious; coronation day;
We hail thy glorious beams. The hour has come,
Yet o'er it hangs a portend of delay
So well believed by some.

A crown awaiteth *me*, most noble king,
My chair stands ready, as thy splendid throne,
Whereon I'll sit and feel the glittering thing,
Without one painful moan.

Thou'll wear thy crown that all around may see
Its far famed jewels and its matchless sheen;
My crown will lie unknown to all save me,
'Tis formed to shine unseen.

Oh, Edward, what uncertainties we meet,
 You have your little doubts and so have I,
 Appendicitis may arrest your willing feet
 Your bards sing bye and bye.

And I? well; though uneasy lies my head,
 Without a golden crown, I sadly fear
 The day will pass in quietness instead,
 Something will interfere.

But not for long; 'tis formed for daily use;
 Morn, noon and evening, it will serve an end,
 Such crowns are honored, they find no abuse,
 They are lasting as a friend.

Thy crown, alas; thou canst not bear away,
 At the last summons to the realms afar;
 My crown goes with me on that final day,
 Fixed as yon evening star.

For he who molded it was skilled,
 And wrought with patient care to make his work complete;
 At every stroke, to me a lesson taught,
 Acknowledgment is meet.

Make sure, my sire, to consecrate thy crown,
 While life continues, to the world's best good,
 That when thy kingly sceptre is laid down;
 For righteousness it stood.

—SARAH J. CHURCHILL.

CENTRAL MICHIGAN DENTAL ASSOCIATION.

The semi-annual meeting of the Central Michigan Dental Association will be held at Ionia, Mich., October 1 next.

P. L. CAMBELL,
Secretary.

WISCONSIN STATE DENTAL SOCIETY

At the thirty-second annual meeting of the Wisconsin State Dental Society, held in the Hotel Pfister, Milwaukee, July 15, 16 and 17, 1902, the following officers were elected for the ensuing year: T. M. Welch, Waupun, president; F. D. Brennan, Ashland, first vice-president; A. G. Fee, West Superior, second vice-president; W. H. Mueller, Madison, secretary; Adolph Gropper, Milwaukee, treasurer. The next meeting will be held in West Superior, beginning the third Tuesday in July, 1903.

W. H. MUELLER,
Secretary.

SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

The fifth annual meeting of the Southern California Dental Association will be held at Riverside, Cal., October 20 and 21. An interesting program has been provided.

LEWIS E. FORD,
Secretary.

COPY OF CABLEGRAM RECEIVED AUGUST 18, 1902, BY COMMITTEE, FOURTH INTERNATIONAL DENTAL CONGRESS.

"The Fédération Dentaire Internationale accepts the invitation of the National Dental Association of the U. S. A. to hold the Fourth International Dental Congress in connection with the Louisiana Purchase Exposition in August, 1904. BROPHY."

NORTHERN ILLINOIS DENTAL SOCIETY.

The fifteenth annual meeting of the Northern Illinois Dental Society will be held at Rockford, October 15 and 16, 1902. The meeting will be one of the best. Dr. Bell, of Aurora, has arranged a good program. The hotel and clinic rooms are good. Members of the profession are cordially invited.

J. J. REED, *Secretary*.

RECENT PATENTS OF INTEREST TO DENTISTS.

- 704,937. Dental engine, Adolph W. Schramm, Philadelphia, Pa.
- 704,601. Dental cuspidor, Joseph E. Van Nostran, Canton, Ohio.
- 705,320. Dental forceps, Seabird H. B. Cochrane, Canal Winchester, Ohio
- 705,532. Mount for artificial teeth, Henry D. Justi, Philadelphia, Pa.
- 705,143. Artificial tooth, James J. Reynolds, Huntington, W. Va.
- 705,546. Artificial tooth, Thomas Steele, Redbank, N. J.
- 705,972. Mold for artificial teeth, Thomas Steele, Redbank, N. J.
- 706,013. Rotary scraper for finishing artificial dentures, Thomas J. Boyce, Chicago, Ill.
- 706,016. Dental flask, Frank A. Brewer, Jr., and G. W. Harvey, Watsonville, Cal.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Bldg., Washington, D. C.

THE AMERICAN SOCIETY OF ORTHODONTISTS.

Second annual meeting of the American Society of Orthodontists, Philadelphia, October 8, 9, 10. Headquarters, Continental Hotel.

Papers: The president's address; "Normal and Pathological Anatomy of the Alveolar Process and Adjacent Tissue," M. H. Cryer; subject to be announced, Edward C. Kirk; "Art in Relation to Orthodontia," Edward H. Angle; "The Deformities of the Superior Maxilla from the Standpoint of the Rhinologist," C. H. Kohler; "The Causes of Malocclusion," Wm. J. Brady; "Retrusion of both Jaws with a Single Appliance," R. Ottolengui; "Nasal Occlusion and Septal Deviation in their Relation to Antral Development and Facial Expression," Royal S. Copeland; "Orthodontia from the Standpoint of a Student," Anna Hopkins; "Distal Movement of Molars and Bicuspids Limiting Extraction," Lloyd S. Lourie; "Stationary and Removable Appliances, Alone and in Combination," H. A. Pullen; subjects to be announced, W. Booth Pearsall, J. Humphries, J. E. Grevers.

Time will be reserved for the consideration of specimens pertaining to orthodontia, which any one may care to present. A cordial invitation is extended to the profession.

MILTON T. WATSON, *Secretary*.

270 Woodward Avenue, Detroit.

The sixth annual meeting of the National Dental Association was held at Niagara Falls, July 28-31, and the following officers were elected: President, L. G. Noel, Nashville; vice-president for West, C. C. Chittenden, Madison, Wis.; vice-president for East, Charles McManus, Hartford, Conn.; vice-president for South, S. W. Foster, Atlanta; recording secretary, A. H. Peck, Chicago; corresponding secretary, W. D. Tracy, New York; treasurer, H. W. Morgan, Nashville. Member executive council, Waldo E. Boardman, Boston. Publication committee: A. H. Peck, T. L. Gilmer, G. V. I. Brown. The next meeting will be held at Asheville, N. C.

The following is a brief synopsis of Judge Chetlain's decision in the case of the

1. It upholds the right of the board to decide what constitutes a reputable dental college, but states that this right must be fairly exercised in the interest of the public and when abused may be controlled by mandamus.

2. That the board not only has the power to make rules and regulations but that it is incumbent upon them to do so, and so far as possible to publish and promulgate them.

3. It holds that the general rules and regulations of the board with the possible exception of that part of Rule 4 which requires certain evidence of an English education are fair and reasonable.

4. While a general rule or regulation as to any one condition or requirement must be held to be a full exercise of the board's discretion it may consider any proper evidence bearing upon the question of reputability.

5. Where the board, whether actuated by proper or improper considerations in the exercise of its discretion, by rule, resolution, agreement, contract or other action, exempts any college from the operation of its general rules and regulations, such action must be held a clear abuse of its discretion and therefore void.

6. The burden of furnishing further evidence and demonstrating the reputable character of the college is on the relator and not on the board.

7. The board has the right at any time, for good cause, to withdraw its recognition of the reputability of a college.

8. I, therefore, find from the evidence that the board heard and determined the question as to whether the college was a reputable college; that it had before it competent evidence, both direct and circumstantial, touching upon the question. I, therefore, hold as a matter of law that its action was final. Upon a careful consideration of all the evidence in the case, I am constrained to deny the prayer of relator's petition, and the petition will be dismissed with costs to be taxed.

THE DENTAL REVIEW.

VOL. XVI.

CHICAGO, OCTOBER 15, 1902.

No. 10

ORIGINAL COMMUNICATIONS.

SOME THOUGHTS ON THE DISCOLORATION AND BLEACHING OF TEETH.*

BY J. P. BUCKLEY, PH. G., D. D. S., CHICAGO, ILL.

Some time ago I had the honor of presenting to this society a paper on the subject of bleaching teeth. At that time I discussed chiefly the cause of the discoloration from putrescent pulps, taking it up entirely from the chemical point of view.

It is my intention to-night to present some thoughts in confirmation of the chemical theory of the discoloration of teeth presented in the above mentioned paper, and also to pay due attention to the selection of the proper chemical, and the details of the actual process of bleaching.

As we scan the various textbooks and dental journals in search of literature or information upon the subject of bleaching teeth, the conclusion is forced upon us that this subject, important as it is, has been neglected, especially in the recent past. It may be that the majority of dentists are perfectly satisfied with the results they are obtaining from certain methods which they employ; or else, failing to accomplish satisfactory results, have decided that these badly discolored teeth cannot be bleached, and have resorted to the more radical procedure of amputating the natural crown and replacing it with an artificial one. I cannot believe, however, that the majority of practicing dentists are completely satisfied with the results they are obtaining along this line, and I should be sorry to think that the latter procedure had been universally adopted.

One of the best papers recently written on this subject was read by Dr. N. S. Hoff, of Ann Arbor, Michigan, at the Tri-State Dental Meeting, held at Indianapolis, June, 1901. While Dr. Hoff

*Read before the Odontographic Society of Chicago.

did not discuss the subject with reference to the cause of the discoloration from pulp decomposition, he took occasion to call the attention of the profession to the theoretical aspect of the subject in the following forcible language: "It may be of advantage to study this question from its theoretical aspect; but should we attempt to do so we are likely to become disheartened, as the problem becomes so complicated that it is practically incapable of complete solution." Again he says: "Notwithstanding these difficulties, successful methods of bleaching teeth will never be made practicable until some definite theoretical knowledge is obtained. This may be secured from laboratory research, but it must necessarily be confirmed by clinical observation; if it be not an actual deduction from successful clinical experience." These words so clearly express my views on this phase of the subject that I have taken the liberty of quoting them.

The first problem which presents itself for solution in this connection is to ascertain, if possible, what products are formed by the process of pulp decomposition that ultimately discolor the tooth structure, and until this question is definitely settled, we will be groping in the dark, for we cannot, with any assurance, select a chemical and expect it to destroy a pigment, the chemical nature of which we know nothing. This is the phase of the subject which should demand our attention, and the one I wish first to briefly discuss in this paper.

We are taught that in so far as the chemical composition is concerned, the pulp tissue differs in no particular essential from that of the other tissues of the body. Understand me to say, "in so far as the chemical constituents are concerned"—not histologically or structurally, but chemically. As this tissue then becomes irritated, we have the successive stages produced which, if unchecked, will ultimately lead to the death of the pulp; namely, the irritation would produce hyperemia, followed by inflammation, at which stage diapedesis takes place. The inflammatory exudate cannot be absorbed, owing to the absence of lymphatics in the pulp tissue, which condition of affairs causes congestion, followed by stasis and the death of the pulp. From this we learn that when the pulp dies, we have present in the pulp chamber not only the exudate, which consists of blood corpuscles and fixed tissue cells, but we also have an abnormal amount of blood. As this dead tissue then is invaded by a microorganism of a pathogenic nature, we have a rearrangement

of the elements which compose the tissue, new compounds are formed only to be broken up, and other compounds produced. This rearrangement of the elements, this breaking up of the various complex compounds—known in pathology as the putrefying process—goes on until we have produced as the final products such simple compounds as water, carbon dioxide, acetic acid, ammonia, methane, hydrogen sulphide, etc., and there still remains that which you have all observed—a semi-putrid substance which I believe to be largely composed of fats. We have every reason for believing, then, that, as the pulp tissue is decomposed, the dentinal fibrillæ are also broken up, the tubuli are enlarged by the action of these microörganisms, and there remain within them little globules of fat which can be observed by the aid of the microscope. Simultaneously with the breaking down of the pulp tissue, the inflammatory exudate and blood are decomposed, the hemoglobin which contains iron is broken up, and this metal is liberated only to become united, in all likelihood, with the negative radicals of the acids produced by the decomposition of the pulp tissue, forming salts of iron.

It is quite generally conceded by those who have given this phase of the subject their attention that the discoloration of a tooth containing or having contained a putrescent pulp is due to some salt of iron. I would change the thought slightly by saying I believe it to be due largely to a compound of iron—making a chemical distinction between a salt and a compound of a metal. This conclusion is based on the fact that ammonia being one of the final products of the putrefying process will unite with the water present, forming a reagent which will precipitate the soluble salts of iron, producing the compounds ferrous or ferric hydroxide, depending upon the form in which the salts previously existed; and as the acids produced are organic and weak, the *ous* compounds in all probability are formed.

It is in connection with this thought that I wish to make two statements. I would have you weigh them carefully, and take them for just what they are worth. *First*, I believe the compound of iron which is ultimately produced by the decomposition of the pulp, air excluded, is ferrous hydroxide, a white compound. *Second*, I believe the compound of iron which is ultimately produced by the decomposition of the pulp, air admitted, is ferric hydroxide, a reddish-brown compound.

This compound, it seems to me, is the so-called pigment with which we have to contend in the bleaching of these yellow teeth, discolored from this source. Should the tooth have a dark appearance, it perhaps is due to a small amount of the black ferrous sulphide, or a failure of the ferrous hydroxide to become completely oxidized into the ferric form, owing to a lack of moisture or oxygen. These statements are confirmed, to my mind, by the following well-known clinical fact or observation:

You can all readily recall cases in your practice where some anterior tooth is giving trouble. By careful examination you find none of these teeth containing cavities. But one of them is sore. It will not respond to the thermal test, and by these and other means you decide that it contains a putrescent pulp. It may have died from the injudicious use of a regulating appliance or from some traumatic injury; at any rate, it contains no cavity, yet a putrescent pulp. Bear in mind that at this time, so far as the *color* of the tooth is concerned, you cannot distinguish it from any of the adjacent teeth which contain living pulps. I believe, then, that the compound of iron which is in that tooth is ferrous hydroxide, a white compound, the pulp having died, air excluded. You open through the lingual aspect of the tooth, seal in a remedial agent, which you know under ordinary conditions will not discolor teeth, and as you insert the medicament air is admitted. The patient returns in two or three days, and a greenish cast is noticed. Ferrous hydroxide, when moist and exposed to air, has the property of turning green, then black, and finally changing to the reddish-brown ferric hydroxide. Chemically speaking, the ferrous compound, when moist and exposed to air, oxidized into the ferric form. You continue to treat the tooth, fill the root, the cavity, and dismiss the patient. But in two, four or six months, if you have occasion to see the patient, you will invariably find the tooth much darker than the other teeth. I believe, then, the compound which has discolored this tooth is ferric hydroxide, mixed perhaps with a small amount of the black ferrous sulphide.

I am not unmindful of the fact that many teeth can be found containing a putrescent pulp, and no cavity, that are very dark. But this does not affect the theory herein presented. In reality, this only adds another clinical fact which confirms our theory. Clinical experience will prove that a tooth containing a recently decomposed pulp is not discolored. There will be no visible change

in color until it receives oxygen from the air through a cavity, or from the red corpuscles of the blood, which latter process would take much longer to effect the change.

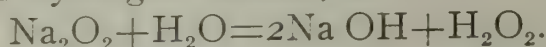
Having thus far brought to your minds the theoretical aspect, as it appears to me, the questions of the chemicals to be used and the details of at least one method of bleaching may well be considered. However, before discussing this phase of the subject, I wish it understood that I am not one of those who believe all discolored teeth can be permanently bleached, regardless of the cause of the discoloration, the condition of the tooth structure, and the length of time the tooth has been discolored. These conditions must be taken into consideration.

Teeth are discolored principally from three sources, namely, putrescent pulps, metallic fillings, and remedial agents. In this day of progressive dentistry, we should seldom be called upon to bleach teeth other than those discolored from the first source mentioned; for any dentist who *improperly* inserts an amalgam filling in any tooth, especially an anterior tooth, would be severely criticised, as would also the dentist who employs, in the treatment of pulpless anterior teeth, such remedial agents as are known to stain the tooth structure. It is not my duty in this paper to discuss the *proper* method of inserting amalgam fillings, but by way of an explanation to the foregoing statement it may be advisable to state that if all amalgam fillings were inserted in cavities as carefully prepared as for gold fillings, using relatively the same skill and polishing when set, the liability to discolor would be reduced to a minimum.

The selection of a chemical which will give the best possible result depends chiefly on the cause of the discoloration. If discolored from the decomposition of a pulp, or from amalgam fillings, the direct oxidation method will unquestionably give the best results. Should the tooth be stained from remedial agents, the selection of the chemical must be governed by the agent which has stained the tooth; for in many of these cases the reducing process gives far better results than the oxidizing method.

The best direct oxidizing agent which can be employed in bleaching by this method is sodium dioxide, used in the powder form. In cases where discolored tooth contains a putrescent pulp, it can be treated and bleached at the same time by the careful use of a freshly prepared *solution*, made by slowly adding sodium dioxide to dis-

tilled water. This forms a solution containing sodium hydroxide and hydrogen dioxide, as



This solution must always be prepared when needed, as the sodium hydroxide gradually decomposes the hydrogen dioxide into water and oxygen. It is also good practice to use this solution instead of pyrozone in the treatment of putrescent pulps, when the teeth are not discolored, as the hydrogen dioxide in the presence of caustic soda being gradually decomposed, nascent oxygen is liberated, which will completely sterilize, while the sodium hydroxide forms a soluble soap of the fatty contents of the tubuli, and this is easily washed out, thereby mechanically removing the iron compounds, which, if permitted to remain, would subsequently discolor the tooth. Care should be exercised not to force any of the solution beyond the apex of the root. It is scarcely necessary to mention this, however, as the same precaution should be observed in using pyrozone for the same purpose.

Before discussing the details of a method of bleaching, I might say that the very best method of bleaching teeth is to prevent them, if possible, from becoming discolored, and, in my judgment, this is possible in a great many instances. Some of the most stubborn cases are those which have been in the hands of careless dentists previous to the discoloration of the tooth. This fact should behoove us to use all care and judgment possible in treating pulpless teeth.

A Method of Using Sodium Dioxide.—The first thing to be done, after having ascertained the cause of the discoloration, and having decided to use sodium dioxide, is to be certain your chemical is efficient. Many operators have tried this method, and have failed to get satisfactory results, for no other reason, perhaps, than that the sodium dioxide used was partially or nearly all decomposed. Exposure to moist air will decompose the chemical. That you may be certain your chemical is not decomposed, I have devised the following simple chemical test: Place about 1 gram of the powder in a clean, dry test tube, and add about 1 c.c. of water. Enough oxygen should be generated to kindle a glowing splinter held at the mouth of the test tube without having to put the splinter down into the body of the tube.

The best results can be obtained by placing the dry powder in the cavity of the tooth to be bleached, and bring about the reaction

by dropping distilled water on the powder in the cavity. It being rather difficult to place a powder in a cavity, some little ingenuity is required to overcome this difficulty. My method is to place a thin platinum ribbon between the discolored and adjacent tooth, permitting it to extend below or above the cutting edge, as the case may be. White gutta-percha is now warmed and pressed against the lingual surfaces of the teeth covered by the rubber dam. This forms a pocket into which the powder can easily be placed, using a little gold or platinum spoon. The powder can be worked up into the root with a glass rod, which has been drawn out to a point. When the distilled water is dropped on the powder, the platinum can be bent so as to enclose the cavity while the reaction is taking place. As your success depends quite as much upon the mechanical removal of the coloring substance as upon the chemical, the tooth must be thoroughly washed after each reaction. This can best be done by using warm water and a bulb syringe, and letting a soft sponge absorb the water. The tooth is dried, and two or three drops of a 2 per cent solution of sulphuric acid is placed in the cavity. This is permitted to remain about one or two minutes, when the tooth is again thoroughly washed. The acid will form soluble salts of the oxides that may not have been mechanically removed by the first washing. The cavity is again dried and, if necessary, the process repeated. Usually two or three applications are sufficient. Better results seem to be obtained by letting the tooth dry slowly after the last washing. When dry, a paste of precipitated calcium phosphate and distilled water is forced up into the root, and burnished against all exposed dentin. This is thoroughly dried and a light-colored cement is used to form a base for the final filling, which should always be inserted before the rubber dam is removed. If the details have been carefully observed, and the cavity is hermetically sealed, there being no other cavities or checks in the enamel through which moisture can enter, the result will justify you in trying the method.

It may be well before closing to state that every precaution should be taken to prevent the sodium dioxide from coming in contact with the soft tissue, as the water in the tissue will unite with the chemical, forming caustic soda, the caustic properties of which would completely destroy any soft tissue on which it acts.

SYPHILIS IN DENTAL PRACTICE.*

BY GEORGE T. CARPENTER, M. D., D. D. S., CHICAGO.

My object in writing this paper on an old and well-known disease is to awaken an interest, and to point out the necessity of recognizing the symptoms, and various syphilitic lesions which come under the observation of the dental practitioner. Syphilis is an infectious and usually a venereal disease of chronic course, communicated from person to person by actual contact with the virus, or by heredity. It is a disease from which all classes may suffer alike, the rich and poor, the infant and adult, the innocent as well as the guilty. It is one of the most loathsome of all diseases, and may require years of treatment before it is eradicated from the system. It is not always venereal in its nature, as the primary lesion may make its appearance through infection in many parts of the body, the eye, nose, lips, and tonsils being favorite points. It is the infectious character of the virus from syphilitic lesions which makes this disease of the utmost importance to dentists, as instruments and carelessness will transmit the virus from a diseased to a healthy person. The strictest antiseptic precaution should be used not only in cases where syphilitic lesions are suspected, but in every case that comes under our care, surgical cleanliness should be observed, not only with the instruments, but with all appliances that may be touched or handled by the operator, and the hands, clothing, and linen should all be in a sterile condition.

In a recent division of syphilis, it was not divided into stages, the one individual having in turn the first, second and third stages, but is divided according to the mildness or severity of the disease in each individual, and the divisions are known as (1) benignant syphilis, with mild transitory symptoms; (2) benignant syphilis with relapsing or persistent symptoms; (3) malignant syphilis with relapsing or persistent profound symptoms; (4) malignant syphilis with relapsing profound lesions that are ultimately destructive. This may be a better division, but for convenience we will consider syphilis under the three stages known as the primary, secondary and tertiary. Some of the lesions peculiar to any of the three stages may manifest themselves in the mouth or neighboring parts, and if not recognized by the dentist may not only result in his being infected by this disease, but he may also, through the instruments used,

*Read before the Chicago Dental Society.

carry the infection to some of his clients. For illustration, I will cite briefly two cases of the primary lesion which have come under my observation.

Case 1. A young practitioner, who was but recently married, was attending to the wants of a patient whom he believed to have syphilis, and through carelessness used a towel which had been placed upon the patient. After a period of incubation a chancre developed on the conjunctiva. He placed himself in the care of a prominent specialist, and under his dictation the young wife was sent to the home of her parents for an indefinite period. He suffered much from the trouble in his eyes, and later had secondary manifestations in the mouth and throat and other parts of his body, as well as being compelled to seek a new field for his professional labors.

Case 2. A young man, unmarried, and suffering from supposed toothache or a pain in the jaw, went to a dentist, who made an examination of his teeth and jaw, but found no cause for the pain, and referred him to a physician, who also made an examination of the jaws and teeth without finding the cause, and sent him to another dentist, who in turn made an examination and referred him to me. The first thing that was noticed on the patient's entering the consultation room was a much swollen upper lip, with a large, reddish-brown, crusted scab, saucer-shaped, with indurated base and margin, and the lower portion macerated by the secretions of the mouth. The glands in the neighborhood were slightly enlarged, with considerable swelling and some tenderness in the submaxillary gland on the same side. Diagnosis: Chancre of the lip. Secondary symptoms made their appearance later on his legs, and in other parts of the body, and the disease yielded readily to antisiphilitic treatment, all of which confirmed the diagnosis. This young man was employed in the business part of the city, getting his lunches at restaurants, with this most of all infectious lesion macerated and loaded with virus, to come in contact with the knives, forks and spoons, the napkin, drinking glass, etc., as well as the hands and instruments of the professional gentlemen who did not find anything wrong with his teeth or jaw.

The primary lesion may appear on any surface of the skin or mucous membrane, where a slight break in the continuity will give direct contact to the virus. The primary sore is called a chancre, which develops very rapidly after the incubation period of about three weeks. The size of the chancre varies from a pin-point to the

size of a dime, and it has a hard base and margins. The color is a dull red, and the margins are usually slightly raised above the surrounding surface, with a depressed center, which may appear glazed or moist, but suppuration is rare except when macerated by the fluids of the mouth. Their duration is from five to six weeks. They are accompanied by an early enlargement of the neighboring glands. The lips and tonsils are the most common location for chancre about the head, and the painful enlargement of the submaxillary gland is pathognomonic of primary syphilis, when accompanied by a neighboring sore which refuses to heal. Carcinoma should not be mistaken for chancre, as the development of carcinoma is not nearly so rapid, and the glandular disturbance is not as early as in cases of syphilis. When a chancre is very small, it may be overlooked until the secondary symptoms make their appearance. Syphilitic fever is slight, and the heart's action is rarely interfered with. In the treatment of syphilis the care of the general health is of far more importance than drugs. Nutritious and digestible food stands foremost. The local treatment for primary syphilis is the thorough cleansing of the parts with peroxide of hydrogen and mild antiseptics, so as to destroy the virus without causing an inflammatory reaction. If the chancre is on the lips, calomel or iodoform may be used as a dusting powder, and a thin fiber of absorbent cotton saturated in flexible collodion may be placed over the sore, extending to the surrounding sound parts, which will serve as a protection. The constitutional treatment for primary syphilis is mercury in some of its various forms, which should be prescribed by an intelligent person who makes a specialty of this disease, and the treatment continued for a period to thoroughly eradicate the disease.

The secondary stage may put in an appearance in from six to eight weeks, with febrile disturbance, or it may be deferred for months before the constitutional disturbances are present. Syphiloderms, which present themselves on the skin, appear as a papule, dry and scaly, which are easily rubbed off, leaving a moist surface. They are found on the extremities and other parts of the body. This same eruption, when on a mucous membrane, is known as a mucous patch, which at first is red, but later becomes a grayish color. They are circular or elliptical in form, and slightly raised above the surrounding tissue, and, as a rule, are symmetrically situated on each side of the mouth or throat, or the sides of the tongue or tonsils. Copper-colored semi-circular eruptions are also present in many cases, and the hair may come out, which may occur in bare patches.

Mucous patches rarely occur on the external surface of the lip, except from extension of the lesion from the inside of the mouth. Occasionally, rapid and deep ulceration follows. Mucous patches are the main source of syphilitic infection, as they may continue for an indefinite period, or recur very many times, while the chancre appears but once, and its duration is limited. It is a good custom before examining a set of teeth to note the condition of the lips and mucous surfaces of the mouth, and carefully examine the tongue, gums, and tonsils, and call the patient's attention to any condition you find present. The local treatment for mucous patches is to thoroughly sterilize with nitrate of silver crystal fused on an aluminum probe, and applied to the patch, and repeat daily as long as a patch is visible. The constitutional treatment should be mercury in some form, pushed and continued to its full degree of toleration, but I would recommend that this treatment would be in the hands of a competent specialist.

The tertiary stage is the destructive stage of syphilis. The destruction of tissue generally proceeds from a gumma, which is a soft elastic tumor resulting from a peculiar kind of caseation of tertiary syphilitic inflammatory deposits. This gumma is situated under the skin or mucous membrane; at first small, it increases in size; is yellow in color, and becomes congested and ulcerates. The ulcerations have irregular, sharply defined borders, with a foul, dirty pus. When situated in the dome of the palate, they ulcerate through soft and bony parts alike. The ulcers may melt the parts away like wax, causing syphilitic clefts and other deformities. Gummata occur in the tongue, usually single, breaking down rapidly into ragged ulcers. Any of the bones or soft parts of the face or throat are liable to be destroyed by tertiary syphilis.

The treatment for tertiary syphilis is to support the general health and administer iodide of potassium, which is a specific in this stage, in doses of ten grains, increasing gradually to sixty grains, three times a day, largely diluted with water.

Janovsky,* in a study of fifty cases of leukoplakia, says that "genuine leukoplakia which is not necessarily to be regarded as syphilitic occurs in individuals who have had syphilis." There is also a form which develops on a syphilitic basis. This form is not influenced by antisiphilitic treatment, and should be designated as a parasiphilitic affection.

*Wiener Medicinische Wochenschrift, Nos. 48, 49 and 50, 1899.

CARE OF THE TEETH AT HOME.*

BY F. H. SKINNER, D. D. S., CHICAGO.

There has been so much written on the subject of oral hygiene, dental prophylactics, etc., that it seems as if there is hardly any more to be said along this line. It is not the aim of the author of this paper to encompass the whole subject of oral hygiene, but just enough to impress upon the patient the necessity of thorough cleanliness and to allow him to work intelligently. The only excuse I can offer for selecting this subject is the everyday condition in which we find the mouths of those coming to us for treatment.

I have not quoted authors writing on this subject, although most of the thoughts expressed in the following have had their foundation from somebody's writings, and their results when applied to my own practice. I have deviated somewhat from the title of the subject, but only so far as it seems necessary to lead up to, or illustrate what I want to say. There are people whose teeth seem to be immune from decay and there are also periods in the lives of individuals when the active agent of caries seems to be under arrest. These cases may be excluded from the list requiring special attention.

METHOD OF ATTACK.

The exact process of decay has never been settled so that the detailed results of one man's work are not disputed by another, but I think it is universally agreed upon that a clean surface never decays; that all decay is caused by bacteria; that particles of liquefied or semi-liquefied or digested food must be present; that the particles of food must become lodged on the teeth in places where nature has left a defect in development or on surfaces favorable to the lodgment of food where attrition and the combined action of the tongue, cheeks and lips do not remove it, and lastly that the small particles of food so lodged and liquefied by the action of the saliva are attacked by acid producing bacteria. One of the first processes to take place is the formation of gelatine, the plaques so arranging themselves as not only to hold the destructive mass in proximity to the teeth, but also preventing the saliva or antiseptic mouth washes from rinsing away or diluting the acid so formed from the teeth, and also that this whole process will take place in from three to six hours.

*Read before the Chicago Dental Society.

STATEMENT.

Now, granted that this statement be true, the only effective prophylactic treatment that a healthy set of teeth properly arranged in the arch can have is the everyday care that the lucky possessor gives them. Of course, when necessary, we should clean the teeth of our patients thoroughly. A great many cases of pyorrhoea alveolaris, I believe, start in the interproximal space from deposits left there. Of course, it takes time and very delicate instruments and manipulation to work around the necks of all the teeth in the mouth, but it should be done, especially just under the free margin of the gums in the interproximal space, and compensation should be had for the time spent in doing it, for cleaning teeth well is as hard work as putting in gold fillings, and a man should earn just as much money per hour at one as at the other. By a good thorough cleaning we may save our patients *dollars*, which otherwise they would spend on fillings or pyorrhoea treatment, and if pyorrhoea can be cured by thorough instrumentation and a little medication, thorough instrumentation at the beginning will prevent it.

INSTRUCTIONS TO PATIENTS.

The first operation should invariably be cleaning the teeth, unless the patient is suffering pain. This presents a more pleasant mouth to work in, but above all it gives you a chance to see what kind of care each individual gives the teeth, and here is where we can be of great benefit to our patients. In the first place, see that they are using properly shaped brushes of good texture. The brush should be small enough to get up to the cervico-disto-buccal portion of the last tooth in the mouth; if the cheeks are so full that the third molar cannot be cleaned, it should be extracted. The bristles of the brush should be uneven in length, tufted at the end and not set too closely together. The patient should have brushes enough so that one brush is not used more than once in twenty-four hours, for a brush that is wet several times a day only half does its work, like a hair brush that is frequently wet does not touch the scalp at all. Again, when only one brush is used, toward the latter end of its existence it allows a soft coating to form around the teeth at the gingival margin, which irritates the gums; and the soft tissues, becoming used to a partly worn out brush, are easily torn or bruised when a new one is purchased, whereas, if several brushes

are kept on hand, as one gives out a new one is substituted, so that at least once a day the gums and teeth are rubbed with a new hard brush. Saponaceous substances should be avoided, for soap lubricates the bristles so that they will frequently slide over a gelatine-coated mass when a good powder would cut it off, and if we can cut or break up the gelatine formation the acid will soon be washed away and not harm the teeth. It is a very common thing for a patient to always start brushing in one place, usually at the cervical margins of some of the anterior teeth. This should be watched for and stopped, for while few do too much brushing, the brush is always stiffer when first put into the mouth and this in connection with the first grit of the powder, year after year, is to the gums and very thinly protected necks of the teeth, what the constant dropping of water is to the stone. The essayist's advice to patients is to start on the occlusal surfaces of the molars, brushing forward and backward, rotating the brush from side to side until it is felt well up on the gums, keeping the bristles pointed toward the roots of the teeth, then the up and down motion, especially down on the upper and up on the lower teeth on both lingual and buccal surfaces, then get clear behind the last tooth until the bristles are felt on the gum. By this method the fissures which are so prone to decay are kept as clean as possible. The lingual surfaces of the lower incisors is another good place to start brushing occasionally, in fact, it is a good plan to make it a point not to form a habit of starting in the same place always, but first on one side, then the other, then upper and then the lower. There is little danger of injuring the gums or wearing the teeth to look like erosion if this rule be carried out. It is well to dip the brush into powder several times while brushing the teeth, but the first dash with fresh powder should always be used on the crown portion where the enamel is thick, for all the rubbing they can do will not hurt that portion of a tooth. Teeth should be brushed at least twice daily, after breakfast and after the last thing eaten before retiring. Powder should be used, after which the mouth should be thoroughly rinsed with water, or, better still, a good mouth wash.

Having given your patient proper instructions as you consider he needs, and, above all, *explained how decay occurs*, in the next sitting see if the teeth have been brushed clean, especially looking at the distal-bucco-cervical portion of the upper molars and cervico-lingual of the lower molars, bicuspid and incisors. If you find

any soft accumulation, give the patient a hand mirror and let him see what you can scrape off the teeth. If necessary, brush your own teeth before him to show him how, or, better yet, have him bring his brush to your office and see him go through the process and see that he does it correctly, even taking the brush in your own hand to show him. I discovered a few months ago that one of my patients had acquired the habit of turning his brush upside down when brushing the lower left molars so that the bony part of the brush was rubbing his gums and the bristles the crown, and the gentleman was perfectly conscientious in his claim that he felt the brush clear down on his gums and could not understand how I could scrape a soft mass from the cervico-lingual portion of his lower left molars. His gums were always inflamed in that neighborhood. Watching him a minute showed me his mistake and since then his teeth have been scrupulously clean. The powder I usually recommend is composed of—

Precipitated chalk oz. 6
 Sulphur oz. 1
 Oil of cassia and wintergreen qs. to flavor.

Any essential oil may be used to change the flavor if these are not liked. In mouth washes I have had the best results with sanitol, and Dr. Talbot's pyorrhoea brush comes the nearest to my ideal of a brush of anything I have seen.

INSTRUMENTS OTHER THAN THE BRUSH.

Regarding toothpicks, I do not think they are necessary if fillings have been inserted properly and teeth are in fairly good alignment, but if a filling has been put in, and you find food crowding down into the interproximal space, the teeth should be separated, the filling taken out and one put in that has contour enough to protect the gums in the interproximal space, and the gums in turn will protect the teeth where the brush will not reach. This same principle applies to crowns. A quill toothpick used properly and only when and where necessary is legitimate, but I have seen the gums in many an interproximal space crowded and bruised from the wooden toothpick habit, until it no longer performs the function nature intended it to, so that it was made possible for an accumulation to start, which was the cause of the beginning of decay or pyorrhoea. Dental floss does just as well as the toothpick and is not so liable to injure the gums. Care should be taken not to let the floss snap the gums after passing the contact point.

A HINT FOR JUVENILE PATIENTS.

It is very hard to get children to take proper care of their teeth, especially the fissures in the occlusal surface of the first permanent molars, so that it is a very common practice with me to cover this surface with Ames' oxyphosphate of copper cement as soon as the tooth is sufficiently through the gums to permit.

NURSES' TRAINING SCHOOL.

There is no time in life when the teeth are attacked by caries as much as in sickness. There are hundreds of nurses graduating from hospitals every year who have no knowledge of dentistry from a dental point of view. My experience is that nurses do not know anything more about keeping their own teeth clean than other people, to say nothing about their patients. If some of the men who have ability in organizing could incorporate a short course on the theory of dental caries and how best to combat it, into the nurses' training schools, it would be the means of saving the teeth of a great many people.

CONCLUSION.

In conclusion I will say that it is far better to be able to prevent a tooth from decay than to have the ability to insert the best gold filling human hands ever made, but if it becomes necessary to fill, thorough cleanliness will make a filling inserted by a man of medium skill and ability outlast a filling in the mouth of a careless person, even if that filling be inserted by the best operator the world has ever produced.

THE SELECTION OF ARTIFICIAL TEETH FOR FULL DENTURES.*

BY J. Q. BYRAM, D. D. S., INDIANAPOLIS, IND.

The selection of artificial teeth is a task that is not always easy and one that often perplexes many of us. The numerous varieties of shapes, sizes, and colors of artificial teeth seem to complicate matters rather than simplify them. If the manufacturers would spend more time perfecting some of their molds instead of having so many new ones constructed, they would serve the profession bet-

*Read before the Indiana State Dental Association, June, 1902.

ter. Those who are situated so that they can take their casts to the dental depots to select their teeth have a great advantage over those who practice in smaller places. It is quite difficult to make the dealer understand just what is wanted when teeth are ordered by mail. So what we need is some system by which we can order artificial teeth more accurately from the dental depots. It is not the purpose of this paper to formulate a system for this purpose, but to offer a few suggestions for the selection of artificial teeth.

The principal points to consider in selecting artificial teeth are size, shape, bite, ridge lap and color. Unless there is a harmonious relation between the different parts there will be a lack of grace and beauty. Artificial dentures may be artistically constructed, but they do not serve from the esthetic point of view if there is lack of correlation of the parts, which is so necessary to produce beauty.

While taking measurements of a number of sets of full upper and lower plain teeth, the following observations were made. The uppers: The size of the incisors and cuspids are not always in proper relation. Many sets have wide centrals with narrow laterals and cuspids, while others have narrow centrals with wide laterals and cuspids. Some have cuspids as wide as the centrals while others have laterals as wide as the cuspids. In almost every set measured the bicuspid are too narrow mesio-distally. Some have second bicuspid from one-half to one and one-half millimeters wider than the first bicuspid. The upper molars are from one to three millimeters too narrow bucco-lingually. This lack of masticating surface on the molars is one of the principal criticisms of artificial teeth. The lowers: Many of the lower sets have centrals and laterals the same width, which is not a serious objection. The cuspids are from one-half to one millimeter too narrow mesio-distally. The lower bicuspid are usually too large for the upper bicuspid. The lower molars, like the uppers, are too narrow bucco-lingually.

Temperament should play a part in the selection of artificial teeth of the proper size. It is not uncommon to see patients of the bilious temperament with the small or medium teeth indicated in the nervous, or to see patients of the nervous temperament with teeth belonging to those of the bilious or lymphatic types. While temperament should be considered in the size of artificial teeth it should by no means be overlooked in selecting teeth of the proper shape. Too often do we see patients with angular, expressive faces,

square arches and vaults, which indicate large, angular, slightly bell-crowned teeth, with excessive bell-crowned teeth long and rounded, which are indicated with the V-shaped arch and the high Gothic vault. It is true that we do not meet patients with basal temperaments. But with the combination of two or more temperaments, the principal basal temperament stands out so that there need be no difficulty to determine the temperament when selecting the teeth.

When considering the bite in the selection of artificial teeth, it should be considered as the distance on incisors and cuspids from their incisal edges to the shoulders on the lingual surface for the protection of the vulcanite. The shoulders are not to determine the distance the superior incisors and cuspids overlap the lowers, but to prevent the plate from having an excess or a deficiency of vulcanite between the shoulders of the teeth and the alveolar ridge. The length of the lip and the amount of absorption of the alveolar ridge determine to a large extent the length of the bite. If the alveolar ridge is long and the lip is short, short bite teeth are indicated. If long bite teeth were used in a case of this kind, the pins would be thrown too near the alveolar ridge, or the incisal edges would extend too far below the lip line. In case of a short ridge and a long lip, long bite teeth are indicated. If short bite teeth were used, there would be an excess of vulcanite between the alveolar ridge and the shoulders of the teeth which would cause an impediment in speech. There are all variations from one extreme to the other, so the selection of the bite for any particular case can only be determined by the conditions present.

The distance the necks of the teeth overlap the alveolar ridge, or the ridge lap, should not be overlooked. The distance from the lip line to the high lip line, the condition of the alveolar ridge and the length of the shut should govern the ridge lap. In case there is a fullness of the alveolar ridge, the necks of the incisors and cuspids should rest against the labial border of the crest of the ridge, while in cases of absorption the necks should overlap the ridge. Many times in cases of excessive absorption, it is necessary to use gum section teeth to assist in the restoration of lost tissues.

For artificial dentures, it is as essential to have the proper color of the teeth as it is to have teeth of correct form. How often do we see patients with artificial teeth two or three shades off in color from the one indicated. Temperament should be considered to as

great an extent in the selection of the proper color of teeth as in the selection of form. The age of the patient should be taken into consideration, remembering that the natural teeth darken as the patient grows older. There is a tendency to select teeth too light in color rather than ones too dark. The principal criticism of the color of artificial teeth as they come from the manufacturer is the uniformity of color which tends to give them an unnatural appearance. The cuspids should be from one to three shades darker than the incisors. The bicuspid should be a lighter shade than the molars. The most satisfactory method for some of us to select artificial teeth is to make our selections from the broken sets, or to exchange the cuspids and bicuspid from the regular sets for others from the miscellaneous stock.

There are a few preliminary steps which may assist in selecting teeth for any particular case. Base plate bites should be used to determine the necessary amount of facial restoration and to obtain the lip line. The lip line represents the line where the upper and lower lips come together when at rest. After the bites have been properly adjusted to the mouth, the high and low lip lines, the median line and the lines representing the axes of the cuspids should be marked. The bites should then be cemented together and removed from the mouth. The cast should be placed in proper relation and cemented to the articulator. After the bites have been separated, the crest of the superior ridge should be located by inserting a warm instrument through the labial portion of the bite at the median line until it comes in contact with the crest of the ridge of the cast. The distance from this point to the lip line gives the length of the central less the ridge lap. The length of the ridge lap should be determined by the high lip line and the amount of absorption of the alveolar ridge. The length of the bite is determined by the distance from the crest of the ridge to the occlusal surface on the lingual surface of the bite. The shoulders on the artificial teeth should be near enough to the ridge to prevent a thick mass of vulcanite in this region. If the pins are too near the ridge, they may be too far from the point where the force is applied, causing the dislodgment of some of the teeth.

The width of the incisors may be determined by gauging the space between the median line and the line representing the axes of the cuspids. The incisors should occupy about four-fifths of this space. The remaining one-fifth of this space is to be occupied

by the mesial one-half of the cuspids. The bicuspid should be approximately as wide mesio-distally as the cuspids. The bucco-lingual diameter of the bicuspid should be from one to two millimeters greater than the mesio-distal. The mesio-distal diameter of the molars should be determined by the space remaining from the second bicuspid to the tuberosities. The molars should be approximately as wide bucco-lingually as they are mesio-distally.

The selection of the lower teeth is largely determined by the uppers. The length of the incisors and cuspids is determined by the distance from the crest of the lower ridge to the occlusal surface of the bite plus the length of the over bite and the ridge lap. The length of the bite and the ridge lap are determined in the same manner as for the uppers. The lower incisors and cuspids occupy the space between the lines representing the axes of the superior cuspids. The incisors should be approximately the same width. The cuspids should be from one to one and one-half millimeters wider than the laterals. The mesio-distal and bucco-lingual diameters of the inferior first bicuspid should be about one millimeter less than that of the superior bicuspid. The mesio-distal and bucco-lingual measurements of the lower second bicuspid should be about the same as those of the upper second bicuspid. The molars should have about the same diameter bucco-lingually that they have mesio-distally.

The following measurements taken on the base plate bites will assist in determining the size of the teeth:

Total length of tooth required.

Length of bite.

Length of ridge lap.

Width at contact.

It is not necessary to take the measurements for all the teeth, but if measurements are taken for an upper central, a lower lateral, an upper first bicuspid and a lower second bicuspid, and teeth are selected to correspond to these measurements, the other teeth of the set will come much nearer meeting the requirements.

Every dentist who orders teeth by mail should have a catalogue of teeth. After the size and shape have been determined, select the teeth that correspond to the measurements. It is often necessary to order the incisors and cuspids from one mold and the bicuspid and molars from another. When writing to the dealer, the dentist should give the mold number, whose catalogue used, the color of teeth, and whose shade guide used.

That many dentists are careless in ordering artificial teeth is shown by the following excerpts from letters received by a dental depot:

"Please send me 14 combination upper shade 42."

"Please send me one right superior plain tooth, size 36, shade 38."

"Please send me a left superior tooth, shade 18."

"Please send me a set of teeth for a lady six feet tall."

"Please send me a Logan crown, shade 10, size smaller than medium."

"Please send me a set of teeth medium size, medium color."

The clerks in dental depots have received no special training in the selection of teeth. When a dentist orders a "set of teeth" and only specifies medium length medium width teeth, how can he expect to be satisfied with what is sent him?

GOLD AS A PROTECTION TO CAVITY WALLS AND MARGINS.*

BY DR. H. C. KAHLO, INDIANAPOLIS.

Many times during my career in the practice of dentistry it has been my unfortunate lot to be confronted with the failure of gold fillings which, on reference to records, I found had been inserted under favorable conditions and were, to all intents and purposes, mechanically correct. Doubtless many of you present have had a few such misfortunes, in which case you will agree that they are not conducive to any degree of contentment. That many fillings fail as the result of abuse and lack of care on the part of patients is undoubtedly true. Many other failures may be directly attributed to the inferior quality of the teeth into which they are inserted. But there are other causes, and to several of these we must shoulder the responsibility when fillings fail to do their full duty.

It has been stated by some authority that the average life of a gold filling is about three years. Just how the statistics were acquired I do not know, nor will I vouch for their accuracy, but it is certain that a fair proportion of gold fillings do not possess the degree of permanency which we or our patients expect of them. Of the several causes from which failure may arise I wish to refer

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you to but one—namely, that which occurs from the imperfect adaptation of the material to the walls and margins of cavities. I believe that as many failures result from this cause as from imperfect cavity preparation. Several months ago I took up this subject with the view of demonstrating, if possible, to myself by what means I could procure the best results in the insertion of gold as a filling material.

The experiments I made were both interesting and instructive to me and I am pleased to have the opportunity to tell you something of the results, though in presenting them in the form of a paper I fully realize that the argument loses strength, owing to the fact that as operators we are endowed with varying degrees of ability, and as a consequence many of you could get good results in the use of materials which in my hands have been unsatisfactory.

I had a double plate of steel made, the parts of which were held together by screws. Into the top piece were drilled twelve cylindrical holes one-eighth inch in diameter, so that when screwed to the base, a heavier plate, I had a dozen cylindrical cavities with two flat surfaces. Into these cavities I inserted gold of half a dozen makes and under different conditions, after which I removed the base plate and viewed the wall side of my fillings under the microscope.

My aims were these—

First—To demonstrate the relative merits of the deposit golds and foils.

Second—To ascertain the force of manipulation which gave the best results.

Third—The influence annealing had on the different forms of gold.

My fillings were made with equal care and without bias of opinion, so that the results were rather conclusive to me.

The materials used were as follows: Of the deposit golds, Moss Fiber and Vernon's. Of the foils, S. S. White's No. 4 cohesive foil twisted into rope, Ney's cohesive foil in large cylinders, Rowan's decimal cylinders, medium size, Pack's cohesive gold, small cylinders, and tin foil. Some were inserted without annealing, while others were annealed. In some instances the force used was the automatic mallet and others were put in under hand pressure entirely.

So far as my experiments go, I have concluded that the so-called deposit or precipitated gold, of which Moss Fiber, Vernon, DeTrey are representatives, are superior under conditions which I shall refer to later, as a base, at any rate, and should be used against all cavity walls and margins.

The great adaptability of this form of gold is in the main due to three characteristics which it possesses—namely, softness, plasticity and the quality of spreading laterally under the influence of the plugger. This latter feature I desire to emphasize particularly, since I believe it exists to a considerably more marked extent in the deposit golds than in foils or hammered gold in any form.

The character of this gold is such that it is particularly amenable to the force of hand pressure. Nor do I mean to confine the practicability of deposit gold merely to cavity walls and margins. I believe it can be used in all classes of operations, with the possible exception of those large contour fillings which require the maximum amount of edge strength. In these latter cases I believe the cohesive foils are preferable.

It certainly seems to me that the manufacturers of this class of gold have taken a distinct step in the right direction and have given us a material which, in addition to being absolutely pure, is superior to any of the old forms of gold as a protection to cavity walls and margins. I presume you have all had some experience with deposit golds, in which case it is unnecessary for me to dwell upon a description of them. Fearing, however, that some may have abandoned them as the result of a failure or two, I want to say something about the manner of manipulation and the conditions under which I have had the best results.

In the first place these golds, owing to the manner of preparation by the manufacturers, are particularly susceptible to the slightest pressure, hence they are carefully packed into pasteboard boxes. It is important that we guard against the handling of them previous to insertion into the cavity. The most frequent cause of failure in the use of deposit gold is, in my judgment, carelessness.

That it is easily manipulated no one will deny; indeed, it apparently works almost as easily as amalgam. Yet we have learned that we cannot "chuck" amalgam into a cavity and hope to have a good filling.

The great difficulties to be guarded against are these: The use of too large pieces, improper or insufficient annealing, insufficient

condensing of each individual piece and the use of unsuitable pluggers.

The gold should be torn apart into small pieces, of course depending in size upon the size of the mouth of the cavity.

The annealing is a very important element in the working of this gold. And here I want to sing the praises of the electric annealer. With it you have a heat that is absolutely uniform and you are able to gauge accurately the temperature you require in order to render your gold plastic and of uniform quality in the matter of cohesiveness.

In the absence of an electric annealer we must resort to the alcohol or gas flame, but under no circumstances should the gold be passed through the flame. My experience shows that this form of gold should be thoroughly annealed. It is my custom to place upon my annealer the approximate quantity required and turn on the current about a minute before I begin the insertion of the filling, leaving the current on almost the whole time I am using my material, or at least to a point when I find my gold showing the maximum degree of plasticity, together with marked cohesiveness. By beginning the operation soon after turning the current into my annealer, I find that the first pieces of gold are very soft and practically unannealed, and I deem this the ideal condition for starting fillings.

Carelessness in the amount and manner of condensing this form of gold will surely lead to failure. In order to have an homogeneous mass it is necessary to condense each piece thoroughly before applying another. I have found it convenient to rely upon the smaller plugger points, feeling that with the same force I condense my gold more and in addition the smaller points reach the nooks and corners where larger ones will not. Of course, I use larger points where I have freedom from undercuts, etc. In the manipulation of this gold it is imperative that we use suitable instruments. These are to be found in the Moss Fiber and Vernon pluggers, and I daresay others with which I am not familiar. The distinguishing feature of these instruments is that the serrations extend over the sides of the points, rendering them particularly effective in the lateral movements of hand pressure.

A word about hand pressure as a condensing force, in comparison with the use of the mallet in any of its forms. I believe that hand pressure should be used to the absolute exclusion of all other

forms of manipulation in connection with or proximity to cavity walls and margins.

Many fillings which would otherwise be good are ruined by plugger points under mallet force, piercing the gold and injuring margins or cavities. Not that it is impossible to have such misfortunes resulting from the use of hand-pressure instruments, but the probabilities are greatly diminished. I believe in the use of the mallet in the building up of contour fillings or in any case where the margins are protected, for I think the average operator can make a denser filling with the assistance of the mallet. The deposit golds are ideal for the use of hand pressure. Another point in favor of hand pressure is that it is not so disagreeable to patients as the different forms of mallet force. In the working qualities of the two makes of deposit gold which I have used most—namely, Moss Fiber and Vernon's gold, I have found these differences. The Vernon gold is denser in the form in which we receive it, hence should be used in smaller pieces. It is less fibrous in its nature and shows greater tendency to crumble in using. This quality is in a great measure avoided by the process of annealing. Vernon's gold requires considerably more annealing than Moss Fiber in my judgment. Either can be condensed into an excellent filling and I believe there is little choice between them.

It is apparent from the foregoing that I am a deposit gold convert, and in view of my experience with it I am pleased to make the acknowledgment.

The foils which I used in the experiments under consideration show a tendency to draw from the margins in proportion to the amount of annealing they receive. Much better marginal results were obtained from foil unannealed, but even these do not compare with those obtained from the precipitate material.

I desire to refer briefly to tin foil as a marginal protection. On several occasions I tried the insertion of tin into cavities in my steel plate, with invariably poor results. Whether this is the result of my unfamiliarity with the material or the fact that the material is unsuitable for the purpose I am not prepared to state, but certain I am that I exercised the greatest possible care. I am satisfied that tin as a filling material is far less valuable than many operators believe it to be.

It has been suggested to me that the insertion of fillings into a plate of steel and their inspection under the microscope does not

prove anything, since the reverse side of the plate corresponded only to the base or foundation wall of the cavity. While this is true, I am certain that it is desirable to have the best possible condensation of the filling at this point. Of the fillings which were placed in those cavities with different materials and instruments the results were widely different. I take this to be pretty conclusive evidence of the relative desirability of the materials used.

I regret that I am unable to show the plate under the microscope. It was my intention to do so, and in order that you might see a variety of fillings I trespassed upon the good natures of my neighbors and had each put in a filling according to his individual fancy. The plate must have got caught in a rain storm somewhere in its journey. As a result the rust has defeated my purpose.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held March 4, 1902, with the vice-president, Dr. George B. Perry, in the chair.

Dr. George T. Carpenter read a paper entitled "Syphilis in Dental Practice."

DISCUSSION.

DR. E. R. CARPENTER:

Mr. President and Gentlemen—It has been my pleasure and profit to read carefully the paper that has been presented this evening by the essayist, and I realize most fully that it is a subject which we as dentists are little competent to discuss, for the simple reason that clinically we come in contact with so few cases of syphilis in practice, and, of course, a discussion to be of any value should be along the line of the oral manifestations of the disease as it affects our patients.

There are only one or two points wherein I would differ from the essayist. In the first place, he spoke of painful enlargement of the glands. From my own limited clinical experience and from a careful study and examination of approximately one hundred cases with oral manifestations, I must say that the enlarged glands in all cases were unattended with pain. The enlarged or indurated glands were easy to detect by digital examination.

The essayist made a statement in the paper to this effect, that mucous patches rarely occur on the mucous surface of the lips, unless they were an extension of the patches in the mouth. Out of one hundred cases I have records of ten in which the patches were absolutely isolated from those in the mouth. They do frequently occur and extend from the patches within the mouth, but it is not at all uncommon to find the mucous patches separate and distinct from those in the mouth upon the outer surface of the lips. The corners of the mouth are, as a rule, the first manifestations we have of the mucous patches running out of the mouth. They occur there before they manifest themselves separately on the lips.

I have enjoyed the reading of the paper very much, and I think the presentation of this subject at this time is very wise. It is a good thing to have a paper of this kind presented to this society once in a while, because it wakes us up to the fact that there is constantly a possibility of infection from carelessness, the essayist having narrated the case of a young member of our profession who became infected by wiping his eyes upon the towel of a syphilitic patient.

DR. L. BLAKE BALDWIN (by invitation) :

A great many of the members of this society were present one evening and listened to a little paper I read on this subject, and therefore, while I may not contribute anything new in discussing the paper that has been read, yet there are some points that I would like to refer to. But before doing so I will say that I have been working for three months on a book of seventy-five pages, which I am trying to make interesting on this subject. I have written about three hundred pages and then cut it down to seventy-five. Probably I shall cut it down to fifty before I get through.

I did not hear the first part of Dr. Carpenter's paper, but there were some statements made in it that I should not like to see published in a dental journal without being criticised. One was the treatment of the initial lesion. The treatment of the initial lesion, as suggested by the essayist, if I understood him correctly, would be to dust it with iodoform. Another treatment would be to dust it with calomel or to cover it over with cotton and flexible collodion. It seems to me this treatment would be disagreeable to the patient, and particularly to the people with whom he came in contact, when iodoform is applied as near the nose as the lip is. We do not get as good results from the use of iodoform applied to chancres as

we do from calomel. While calomel is a good thing for a local dressing powder, at the same time I would suggest for the treatment of a chancre of the lip or for any part of the body Unna's plaster of hydrargyrum, not the U. S. pharmacopeia plaster, because that is too hard and stiff. Unna's plaster is flexible, so that it can be bent to any shape desired, and it does not make a particle of difference how old it is.

Another point touched upon by the essayist was with reference to the secondary eruption. He spoke of the scales and, if I remember correctly, an oozing surface. That is not a common eruption of syphilis. The common eruption of syphilis is the erythematous variety, and it is an eruption that you should be able to recognize. Almost any one can recognize a syphilide, but an erythematous syphilide does not show as plainly unless one has seen many cases and is able to recognize it. Sometimes the erythematous variety runs into the papular or pustular form. I speak of the erythematous variety because about ninety per cent of the cases of tertiary syphilis come from cases that have had an erythematous eruption. If a woman has a chancre on the cervix, in looking at it herself she cannot see the eruption. One has to stand away from the patient about six feet in order to see it. For that reason many women are much surprised when you tell them, from looking at the tertiary lesion, that they have had and have syphilis. They really do not know that they have it.

Another point the essayist referred to was that we should pay more attention to the patient and the patches in the mouth. I think we most certainly should. I would suggest what I carry out in my practice and which works very well—namely, when I see a patch in a patient's mouth that is syphilitic I never ask him whether he has had syphilis or not, but I simply say that they have syphilis. I think it is a great mistake to ask patients whether they have had syphilis or not, because they do not like to tell you if they have had the disease.

Another point touched on in the paper was the treatment of tertiary syphilis. I have a strong objection to the treatment which has been suggested by the essayist, that is, beginning with ten grains of iodide of potassium three times a day. If you have a case in which there is perforation of the hard palate due to syphilis, and there is likewise destruction of bone there, ten grains of iodide of potassium, administered three times a day, will not give you the

results you are looking for. When you get a case of syphilitic perforation of the hard palate, such as Dr. Carpenter has so beautifully described, one day the perforation will be quite large and the next day you can put a half dollar through it, because it is all undermined. When you have such a case you must give the man a good deal of medicine. If you give iodide of potassium the first day, give him fifty, a hundred or a hundred and fifty grains, jumping up fifty grains a day until you reach the point of giving four hundred or five hundred grains a day. The result will be that you will not get iodism as quickly from giving fifty grains of iodide of potassium three times a day as you will from ten grains three times a day. I do not believe I have had a case of iodism for four or five years, and if you will administer iodide of potassium as I have suggested I can assure you you will not have iodism. Furthermore, one may use bichloride solution hypodermically, giving the patient, say, fifteen drops every day until they commence to show mercurialization. You will find in that way that a perforation of the hard palate, which is about the size of a half dollar, will in the course of five or six days almost completely close.

DR. TRUMAN W. BROPHY

was asked to discuss the paper. He said:

I prefer to hear from some of the other members, but what little I have to say upon the subject I may as well say now. This is a very important subject for us to consider, because we have so much to do with it, perhaps not consciously, but we have syphilis to deal with nevertheless. The phase of the subject which appeals to us most has to do with children, and for a good many years I have been one of those who abhor the methods of our public schools in using drinking cups, etc., for children. A little child came to me only a few weeks ago who unquestionably had syphilis. The child was too small to go to school. If it had been old enough it doubtless would have gone and would have used the same drinking cups that other children used, and might have carried infection to others, thus spreading the disease. How true it is that we are absolutely unconscious of the dangers that surround us. One of the most distinguished gynecologists of this city, a man who won distinction wherever medicine was practiced, lost his life from an infection which he got during an operation. He died of syphilis. And so the dentist, who is constantly coming in contact with these papular syphilides, as the gentleman (Dr. Baldwin) who has just taken

his seat remarked, cannot be too careful in treating the patients who come under his care. Many a dentist who comes in contact with these conditions is perhaps unconscious of the danger of a little syphilitic lesion; even a scratch of the finger (what would seem at the time a simple thing) may afford an ingress to infection and result in the ruining of a constitution. We cannot be too careful in guarding ourselves and in guarding our patients against the possibility of infection. We must be careful with all of our instruments, with our hands and with everything we have to use in our operating rooms. We must see to it that our instruments are carefully and thoroughly sterilized before using them on another patient. I do not think we dwell upon this subject as much as we should, and I do not think dental students are impressed deeply enough with the importance of antiseptic cleanliness in the performance of operations.

I do not know that I can enter upon a discussion of the different statements made in the paper any more than to say that I think syphilis frequently occurs without any special knowledge on the part of the patient until after the system has become so tainted with the virus that he is in a condition to be wrecked physically.

I agree with Dr. Baldwin in regard to the liberal use of medication in cases of this kind. I do not believe the man lives who has gone too far in the use of iodide of potassium. Doses of seventy-five grains under certain conditions are all right. I believe we should start with heavy doses instead of with light ones. As to iodism, in the use of homeopathic remedies we all know that mercury, for example, when administered in minute doses, is more apt to produce ptyalism than if given in larger doses. Just so with the iodides. If we use them freely and largely we are not so apt to have bad effects as we are when we administer them in minute doses at frequent intervals.

I hope our friend (Dr. Baldwin), who is writing a book, will introduce part of a chapter, if not a whole one, in such shape that it will impress every medical man who has an opportunity to read it with the importance of urging upon the authorities in our schools the necessity of antiseptic cleanliness, and keep in their minds the fact that there is a possibility of infection. We have no means of isolating or of refusing to admit children who are infected with this and other diseases. They attend schools; they drink out of the same cups; they use the same towels, and are liable to carry in-

fection to the eye, as was mentioned in a case quoted by the essayist, followed by destruction of the eye. In fact, the destruction of the whole being with this disease should be thought of by authorities who have to do with the care of little children. I hope Dr. Baldwin will do all he can to impress upon the officials of our public schools the importance of throwing a safeguard around the little ones who are so unconscious of the dangers that surround them.

DR. C. P. PRUYN :

It has so happened that in my practice I have had a large number of syphilitic cases to treat. I recall one case that came under my observation, but did not treat. I cite this case to show how communicable the disease is. A very prominent member of the bar in Chicago, whose name would be familiar to most of you were I to mention it, was attacked with a severe disease. He did not know what the trouble was; neither did his physician recognize the true nature of the disease at first. Finally he decided it was syphilis. Then the next thing was to try and find out, if possible, where he contracted the disease. This man stated upon his honor that he had not been exposed in any way in an illegitimate manner, and I think his statement was a truthful one. He had in his office a man working for him who was generally known to be a rake. Both used the same towel, and this man was inoculated through a little pimple he had upon his forehead and came near losing his life.

There are many manifestations of the tertiary form of the disease which often come to us sooner or later. Necrosis of the jaw is seen frequently. I have had a number of such cases and I did not cure them at once. It takes some time, days, weeks, months, even years sometimes. It is necessary to have the patients under observation for a considerable time. The necrosis which may follow the tertiary stage may often mislead us as dentists if we have not examined into the subject considerably, so that I am glad this subject has come before us. We have so many chances to see lesions on the mucous membrane of the mouth and fauces that when once we have become familiar with them it is comparatively easy to make a correct diagnosis. These lesions, particularly a study of them, should constitute an important part of the curriculum in our dental colleges. Students should be taught the appearance and nature of these lesions, so that they may be on the lookout for such cases and readily diagnose them.

I remember the case of a young man who had the disease some two years previously. He had been under vigorous treatment with the iodides and at this time he presented himself with a lower wisdom tooth that was giving him considerable trouble. I removed this tooth, but his system had become so poisoned that it took weeks and months before I cured the disease of the jaw. In the meantime I gave him large doses of proto-iodide of mercury. The patient is doing nicely now. I am afraid of a recurrence; I cannot promise him that he is cured for an indefinite time. I have got to watch him.

Let us be very careful in regard to these cases. The point made as to sterilization of instruments cannot be too thoroughly emphasized, because it is so easy to communicate the disease from one person to another by instruments that are not thoroughly sterilized.

DR. G. V. BLACK:

I did not think of speaking on this subject. However, there were one or two points that came to my mind during the reading of the paper to which I may call attention. The essayist made a statement to the effect that the submaxillary glands became enlarged when syphilitic sores occur about the mouth. I would like to ask him whether he does not mean the lymphatic glands? Although he called them submaxillary glands, there are other glands in the angle of the neck. In examining many cases I have been led to notice this very carefully, and I have been in the habit of seeking out the glands that were enlarged. I have found the salivary glands not enlarged.

A case presented at my clinic only a few days ago with a patch on the upper lip, the glands in the angle of the neck were considerably enlarged, particularly those just below the lower margin of the jaw. The question arose as to what glands they were. Upon digital examination, with one finger in the mouth and one on the outside, it was easy to separate the submaxillary gland from the lymphatics, and to determine that it was the lymphatic glands which were enlarged, not the salivary gland. I think that this is almost uniformly the case, that the lymphatics are enlarged, not very sore usually, sometimes a little bit of soreness on pressure, and occasionally I have noticed quite a little bit of soreness in these glands.

I am inclined to think that too much stress is put upon the frequency of the accidental communication of syphilis. Too much

stress cannot be placed upon the danger of accidental communication of the disease from one to another, and the necessity for sterilization and for surgical cleanliness in the handling of it, and all of that, but it seems to me that a little too much stress is put upon the frequency of its occurrence. I think it is comparatively rare that we have syphilis communicated in this way, and yet it occurs often enough, so that we should be on our guard continually in regard to the sterilization of instruments, surgical cleanliness, etc. A slovenly operator, who will allow his instruments to be in bad condition, is liable to communicate disease from one person to another. We should always be on our guard as to the condition of our instruments, our hands, our linen, etc., and if we are careful there is almost no danger to the person or to others in the handling of these cases. I sometimes feel that this element of danger is over-rated. Instead of going to work trying to prevent this danger, practitioners and students are continually afraid to take hold of these cases. They are afraid something will happen to themselves or to some one else because they are handling these patients. There is not that amount of danger of transmission of the disease which should make young practitioners afraid to handle the cases. Of course, they should know the danger and be on their guard continually, but it is the same kind of guardianship as to cleanliness that should be carried on continually in the office.

DR. GEO. T. CARPENTER (closing the discussion) :

I feel that Dr. E. R. Carpenter misunderstood me in reference to soreness of the glands. I spoke of tenderness in the submaxillary gland in primary syphilis of the lip, but not of tenderness in the enlargement of the lymphatics in the secondary lesion.

Dr. Baldwin in his remarks alluded to my covering up a chancre when it was on the external portion of the lip. My object in covering it in the manner described is to prevent infection. The chancre itself is saucer shaped, and I spoke of taking thin fiber, saturating it with collodion and attaching it to the sound margins. This relieves the chancre itself. Of course, the chancre is underneath and untouched. It prevents the patient when using a handkerchief from coming in contact with a possible crack in the chancre, which he may do unconsciously a dozen times during the day, and this forms a protection without interfering with the dusting powder that has been applied underneath.

With reference to giving ten grains of iodide of potassium three times a day, I stated distinctly that I begin with ten grains and rapidly increase up to sixty grains, and give it largely diluted with water. The danger in giving 300 or 400 grains of iodide of potassium does not lie wholly in having iodism, but it is knocking the stomach of the patient out, and therefore it should be given in small doses, largely diluted, until the stomach becomes accustomed to the drug, and then increase the doses rapidly until large amounts can be tolerated. Five to ten grains of iodide of potassium three times a day can be tolerated at first by a great many persons, and thirty or fifty grains may be all that they will need in order to obtain results. Other patients may require more, but there is no earthly object in giving three or four hundred grains when the object can be accomplished by giving smaller doses.

Dr. Black asked whether I did not mean the salivary gland. His question is probably answered in my remarks in reference to Dr. Carpenter's statement—namely, that it was the submaxillary glands I meant.

In a recently published article in *American Medicine* by Dr. J. E. Rhodes, thirty-five cases of chancre of the tonsil are reported. He says that there is always marked enlargement of the submaxillary gland, which is indurated and usually quite tender. In looking up the literature I found that other authors have mentioned enlargement of the submaxillary gland from primary lesions about the head. Personally I have noticed enlargement of this gland in cases under my care. We always have more or less enlargement of lymphatics in both primary and secondary forms of syphilis. They may be slightly tender, but in primary syphilis, where the submaxillary gland is enlarged, it is very much indurated and quite painful.

Dr. F. H. Skinner read a paper on "Care of the Teeth at Home."

DISCUSSION.

DR. FRED B. NOYES:

Mr. President—It is a great pleasure to me to open the discussion on this excellent paper. It seems to me that many times the dental practitioner is apt to become so much occupied with specific operations, putting in fillings and doing other things which we are called upon to perform, that he is apt to lose sight of the fact that he is responsible for the health of the mouths of his patients. He neglects the hygienic advice which should be an essential part of

his treatment. This is true of the medical profession as well. It is a common thing for a physician to prescribe medicines for stomach trouble and say nothing about late hours or pure food. The dental practitioner is liable to drop into the same habit. He repairs the damage which has occurred in the mouths and teeth of his patients, but he does not properly advise them against the causes of the original trouble. For that reason it seems to me the paper just read is timely, and such a topic should occupy a larger share of our time in society meetings. There are a few points I would like to take up and discuss in detail.

The causes and influence of caries were well summarized. In regard to the removal of deposits on the teeth, too often we neglect the interproximal spaces under the free margins of the gums, and I think a great many times it is practically impossible at a single operation to avoid the oversight of some particles of deposit. We often remove a piece of deposit from an inaccessible place and think we have removed it all. We have every reason to believe we have removed it, but if the same locality is looked at carefully a few days later the conditions which are present will indicate to us whether the cause of the inflammation has been removed or not. If the deposits have all been removed there will be a distinct improvement in the appearance of the tissues, but even if a small bit has been left the same general condition will prevail in that spot and we may know there is something still to be looked for. It is easy to remove certain deposits, while it is hard to remove others.

The instructions given by the essayist apply to home care of teeth, and here comes in the use of the toothbrush. Shortly after I had read his paper for the first time, last fall, I saw a beautiful illustration of the damage done to the gums by beginning brushing in one position. The gums were receded over the left upper cuspid about one-eighth of an inch farther than any of the other teeth in the mouth. I asked the patient a question and she said that she began to brush her teeth always on the left side. By the motion of the brush in the right hand she was in the habit of carrying the brush back and forth around the angle at the cuspid in such a way as to injure the gum at that point. There was no deposit at that position and not very much inflammation, but the gum had receded to a considerable extent. If we study that point carefully in some of our patients we will find a recession of the gums at one or two places, especially at the angles of the mouth, either right or left,

above or below, caused by the habit of the patient in using the tooth-brush.

There is one point which the essayist did not mention, but which I would like to add. It is our duty, I believe, not only to instruct our patients in regard to the care of their own teeth, but we should more thoughtfully look after the teeth of children of our patients. The average parent does not think of a child's teeth giving it any trouble until the child complains of them. Even the most careful of parents do not think of bringing their children to dentists until they begin to complain of their teeth, and then it is too late for us to do work for them without causing more or less pain. But if we advise parents that their children's teeth should be looked after before they reach the age of four we may avoid much of the pain which the child would otherwise suffer. In caring for the teeth of families, as most of us do, it is our duty to know what children there are in the family and whether their teeth have been looked after by the time they are four years old.

DR. L. O. GREEN:

I want to thank the essayist for his most excellent paper. I was particularly interested in what he had to say about nurses, who should be instructed regarding the care of patients' teeth in cases of sickness. I have seen a great many cases in my own practice in doing dental work for nurses. Their teeth and mouths are, as a rule, in very poor condition, and if they are instructed how to care for patients' teeth they will take better care of their own mouths. It is a bad condition of affairs when a nurse who is attending a patient has a filthy mouth. If they received early training along this line it would help them materially.

DR. M. DE BOER:

Mr. President—I would like to say a word or two regarding the second paper that was read this evening. I am associated with a dentist who has been in practice about thirty-five years, and he has directed attention to the use of hard toothbrushes a great deal from time to time as doing much damage to patients. In our country, I suppose, people do not know as much about dentistry as do the laity here, and I know myself that many patients use a tooth-brush in the wrong way. They use tooth powders of bad quality. Their attention is drawn by advertisements and promises to the results which can be obtained if they will only use certain brushes and certain tooth powder. I do not think the essayist emphasized

the fact sufficiently that patients are using toothbrushes and powders in the wrong way. In our country they certainly do it, and I have seen very bad results from them.

DR. SKINNER (closing the discussion) :

I do not know that I have very much to say in closing the discussion. I was in hopes that the paper would bring out more discussion than it did.

In speaking of not being able to get the teeth clean, particularly the interproximate spaces, I will say that I have used dental floss, which helps very materially in locating and removing deposits from that portion of a tooth, passing the floss into the interproximate spaces as far under the margins of the gums as I can get it. In this way one can locate tartar that is otherwise difficult to find.

One of the speakers questioned the use of sanitol on account of it being slightly acid in reaction. I do not think free acid in the mouth hurts teeth. In the treatment of pyorrhoea alveolaris we use lactic acid, chromic acid, aromatic sulphuric acid and trichloroacetic acid. Many of these are powerful acids, but they do not hurt the teeth a particle so far as I have observed. It is acid which is confined on the teeth for hours at a time that does damage to them.

With reference to the remarks of Dr. De Boer about teeth being damaged from severe brushing, I think if he will observe closely he will find that very few teeth are damaged by brushing as compared with the number that decay at points which should be kept clean. In many cases you will find a soft, slimy deposit on the teeth which the toothbrush does not touch at all. The method I have outlined for brushing teeth is intended to equalize the rubbing so that the brushing is done in all parts of the mouth and teeth equally, instead of on three or four or half a dozen teeth. Very few patients brush their teeth too much; the majority of them do not brush them enough. But they do considerable damage to a few teeth by forming the habit of always starting in the same place year after year. I thank you all for the complimentary remarks and attention given the paper.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held March 17, 1902, with the president, Dr. C. N. Johnson, in the chair.

Dr. J. P. Buckley read a paper entitled "Some Thoughts on Discoloration and Bleaching of Teeth."

DISCUSSION.

DR. FRED B. NOYES:

Mr. President and Gentlemen—I do not feel able to open the discussion on this paper as it should be done. There are a good many things in it to be considered. It is hard for me to believe that the cause of discoloration is quite as simple a matter as is presented by the paper. The essayist gives three causes for discoloration of teeth: Putrescent pulps, amalgam fillings and remedial agents. The last two we might dismiss without further comment; but the first one needs enlarging; that is, I think it is certainly true that putrescent pulps are not the only or the most prominent causes of discoloration of the teeth. Pathological conditions, which begin with irritation and proceed to inflammation, suppuration and putrefaction, probably cause the greatest number of discolored teeth. But there are teeth which are discolored following other pathological conditions. Every old practitioner will recall cases of teeth which have turned red over night, and patients have come in the morning with a tooth red. Now that condition results not from inflammation, but from hyperemia leading to infarction of the pulp. Let us examine carefully the cause. An acute hyperemia occurs, so that the enlargement of the arterioles fills the pulp with blood. The pressure of the blood and the enlargement of the arterioles produce pressure upon the veins at the apical foramen, the walls of which are more delicate in structure than those of the arteries. The exit of the blood from the pulp is cut off; the ingress of the blood to the pulp is maintained, but the circulation is stopped because no blood can leave the pulp through the vein. The result is infarction of the pulp: as in an area supplied by terminal arterioles in the brain or the kidney, where the veins are occluded by embolism. The tissue becomes filled with blood, breaking through the vessel walls and the red blood corpuscles passing out. That is the first step toward discoloration in infarction. The second step is the solution of the hemoglobin from the red blood corpuscles becoming dissolved in the serum, and that solution of hemoglobin is taken up by the protoplasmic fibrils in the tubules, so that every tubule of the dentine becomes full of the solution of hemoglobin and the whole dentine through to the enamel is red. This usually follows several hours of very acute pain. By the next day the tooth is very dark. What change has taken place? The same change which may be

observed in reverse in the butcher shop. You go to buy a beefsteak for dinner; the butcher takes down a piece of meat, the outside surface of which is bright red. He cuts off your steak and the meat which is exposed is dark purple, but in a few hours it becomes red. The hemoglobin in the meat or the blood on the surface has been exposed to the air and converted to the arterial condition. The reverse of this occurs in the dentine. The solution of hemoglobin goes through the dentinal tubules and the organic matter in them, the dead protoplasm of the fibers of Tomes, takes up a part of the oxygen, takes it away from the hemoglobin, partially oxidizing the organic matter in the tubules and partially reducing the hemoglobin and darkening the color, so that by the next day the tooth is very nearly black. That may be taken, I think, as an introduction to the causes of tooth discoloration. It is hard for me to believe that in a pulp chamber, under any circumstances, we have a complete disintegration of pulp tissue and the organic matter present, which would lead to such simple compounds as water, ammonia, hydrogen dioxide, ferrous hydroxide or ferric hydroxide, and ferrous sulphide. These compounds would undoubtedly result from a complete decomposition of such organic substances, but do we get so complete a decomposition in the confined pulp chambers? I doubt it very much.

To take it up from another standpoint, these compounds, ferrous and ferric hydroxide, are insoluble compounds; ferrous sulphide also. They are, strictly speaking, pigments, like paints. If these pigments were present in the pulp chamber only they certainly would not produce discoloration of the entire tooth. They must be present clear through the tubules of the dentine. We cannot suppose that they are forced into the tubules if they are formed as precipitates. They must get into the dentinal tubules in a soluble condition and be formed by the decomposition of those compounds in the tubules and so be precipitated in the tubules.

Hemoglobin is an exceedingly complicated substance. It contains hundreds of atoms of many kinds. Its molecular weight is something like 16,000. It is a soluble substance and contains iron. The source of the iron in these substances ferrous and ferric hydroxide and ferrous sulphide, must be from the hemoglobin. If the iron gets into the dentinal tubules it must do so in solution, and the decomposition of the soluble substance resulting from hemoglobin is not an abrupt thing. It goes through a whole series of

changes, from the exceedingly complex compound, hemoglobin, down through stages to less and less complicated substances, and we have in that series of decomposition products of hemoglobin a whole series of colored compounds before ferrous and ferric hydroxide and ferrous sulphide could be reached. It seems to me probable that these color compounds, which are not simple, which are complicated organic compounds in themselves, are the immediate source of the discoloration; compounds of iron, as the essayist has said, rather than simple salts of iron; compounds of iron more complicated by far than such simple compounds as ferrous sulphide, ferrous and ferric hydroxide. I believe the discoloration of the teeth from iron is not due to such simple substances, but to the more complex decomposition products of the hemoglobin, and it is to be compared with the decomposition products which occur in the breaking down of blood clots in any position in the body. For instance, a man gets a black eye. The first day it is red; the next day it is purple; it changes to blue, to green, to brown, to yellow. Why? Because of the formation of these colored decomposition products of hemoglobin. But I am inclined to think that even then we have not covered the ground of tooth discoloration.

From a histological standpoint we regard dentine in a rather different way. From the handling of dentine in microscopic sections we become impressed with certain facts. For instance, we may take a section of dentine and color it in one or two or three different ways. We may treat it in such a way as to fill the dentinal tubules with a colored insoluble substance and produce color to the whole dentine. That would correspond to the formation of a colored precipitate in the tubules by some decomposition. But the tubules themselves are full of organic matter, so that we must suppose it is possible for a colored compound to result either from decomposition of the products of the blood or from decomposition of the contents in the tubules. On the other hand, histologically we may have the color of the dentine, due not to any of the contents of the tubules, but to the color of the dentine matrix. We may treat the dentine with some substance which does not fill the tubules with colored precipitate, but which leaves them empty and which leaves the organic matrix of the dentine stained, so that the whole solid substance of the dentine from one tubule to the next is colored. There we have a distinctly different condition, and it seems to me it is possible that we have both of these conditions occurring in dis-

colored teeth in the mouth. We may have the presence of pigments derived from iron in the blood; we may have pigments derived from the decomposition products of other organic matter (aside from the hemoglobin of the blood) yielding colored substances in the tubules, or we may have a discoloration of the organic substance of the dentine matrix, and it seems to me that the discoloration of the dentine matrix more often occurs from remedial agents than from other things, and those discolorations are hard to bleach; for you have the whole substance of the matrix to bleach, not the mere contents of the tubules.

In regard to the practical method of application of sodium hydroxide, there is nothing but commendation to be said.

There is one other point I would like to speak of, and that is with reference to the formation of ferrous hydroxide, the white compound, which is converted, as the essayist has said, by oxidation into the ferric condition. As I said, I doubt the formation of that compound. But even if it is present, I do not see how it is possible for the ferrous hydroxide to be oxidized to the ferric hydroxide by oxygen derived from the red blood corpuscles in a putrescent pulp. Certainly the red blood corpuscles in that pulp at the time it becomes putrescent have not sufficient oxygen to completely decompose the pulp tissue, and then oxidize the ferrous hydroxide to ferric hydroxide, and there is absolutely no way for any new red blood corpuscles to get into that putrescent pulp, because it has no circulation. (There is no way for that to be oxidized by the red blood corpuscles from the general circulation, because the pulp tissue is cut off from the general circulation. There is no longer circulation in it.) I wish that we might have had some experiments upon this subject. The time was too short to undertake them. But several experimental tests of these two ideas occurred to me. It is of very little value to you to explain the action of reagents upon substances, the presence of which we have only theoretical proof, without experimental evidence of their presence and source. I wish, for instance, we might take a number of pulp chambers, fill them with a solution of hemoglobin and carry them through the various decomposition processes and see what we get; and fill other pulp chambers with simpler salts of iron and see what we get. I wanted to put into a pulp chamber ferric hydroxide and see if that precipitate could be forced into the dentinal tubules so as to produce a discoloration of the entire tooth. It does not do for me to say that it cannot be

done when I have not tried it. May be it can. But decomposition is a gradual thing. Complicated organic compounds break up into simpler ones and into more simple ones, as the essayist has described, and if there be a series of color compounds of great coloring power, before you reach the simple compounds of low coloring power, and the complicated compounds are stains as well as pigments, it is logical to suppose that the first and most potent are the ones which cause the color. They would probably, according to the description of the essayist, be more easily bleached than the simpler compounds, because it would be difficult to reach the precipitate of ferric hydroxide located in the minute tubules through the entire substance of the dentine. They must be first reached by an oxidizing agent, then dissolved by an acid. We may suppose that a more complicated pigment, such as that which results from hematin or hemin, further reduced, leads to an uncolored compound, still containing iron. Perhaps that explains why those teeth take on the color again. They may obtain oxygen from the other organic matter and be oxidized back to the colored compound by partial reduction of the organic matter which surrounds them.

As the essayist has said, in quoting from Dr. Hoff, the chemistry of tooth discoloration is very complicated, and we can only reach anything like satisfaction by a very careful study of the decomposition products of hemoglobin.

DR. A. W. HARLAN:

I only heard a part of the paper and the whole of Dr. Noyes' discussion of it, and I do not know whether I care to discuss the paper or the discussion, or to discuss the subject. The question of discoloration or staining of teeth, when the pulps have been devitalized or have died from violence or other causes, and the question of bleaching teeth are somewhat old. Part of the discussion that has taken place to-night, and to which the most emphasis has been given by Dr. Noyes, has been discussed before societies in Chicago practically in the same manner that Dr. Noyes has discussed it. I should say myself, if I had never read a book on the subject, that the discoloration of teeth produced by the decomposition of the pulp and by the deposition of substances that gain entrance to the pulp chamber from the outside, is one that even now, in spite of the discussion of the paper, is not clearly and wholly understood. I think that we have arrived at methods of removing and destroying discolorations without having fully determined the

whole number of causes that produced them. If we can render the substances that infiltrate and permeate the dentine and the matrix soluble, so that they can be washed out and absolutely gotten rid of, we have succeeded in bleaching teeth, and there is no theory of bleaching that will stand the test of scientific scrutiny much better than the one first promulgated in its present form by Dr. Buckley. If the gentlemen who first used sodium hydroxide for bleaching had made it simple and understood it as Dr. Buckley has done, the bleaching would be a comparatively easy thing. But they did not. The processes for making solutions of sodium hydroxide were complicated and so much oxygen was lost that an excellent and almost invaluable agent was about to be discarded until Dr. Buckley presented to this society his conclusions last year. It has happened that in the last few days I have been spending some time on this subject before the students in the college, and if I had known that I was going to be called upon to-night I would have been prepared to make some experiments to show how to render the substances, whether ferrous, ferric or any other combination of iron, soluble, so that you can get them out of the teeth, and this would be more important to the members of the society than any disquisition on the causes of the discoloration of them, although that is of paramount interest from a purely scientific standpoint.

Dr. Noyes in his discussion of Dr. Buckley's paper said that he would dismiss from consideration any causes of discoloration, except those resulting from the decomposition or putrefaction of the pulp, and then later in his discussion he said he thought most of the discolorations of the matrix were produced by remedial agents. It seems to me that those discolorations are perhaps of greater importance to us to destroy and get rid of than the discolorations produced by any of the organic decompositions, from the highest standpoint down to the lowest of hemoglobin and its compounds, because we do know that with sodium peroxide, in the manner in which it is used, also with aluminum chloride and Labarraque's solution of chlorinated soda and twenty-five per cent pyrozone, we can dissolve and destroy and oxidize and render soluble the salts that probably come from hemoglobin or some forms of iron. We know that because we can do it experimentally and practically we can do it inside the teeth.

As to the removal of the discolorations produced by the use of the red carboic acid, those that are produced by oil of cassia, by

any of the agents that contain gum resins, we do not know very much about how to get rid of them. Practically in teeth it is almost impossible to do that. Again, I consider it is of the greatest importance to know how to get rid of stains produced by the use of alloys, especially those containing copper and the copper amalgams. I think this is probably one of the greatest sources of discoloration that we have, the indiscriminate use of these in teeth that are not pulpless. But if they are pulpless we get such discolorations that we are almost forced to cut the tooth off in order to put on a presentable crown where the natural crown stood. So I do not think it would be wise not to consider those causes. We know that there are thousands of dentists who are making use and misuse and abuse of remedial agents, who do not know their effects on tooth structure or on the soft tissues, and so we ought to study the thing in its three parts, or four, if there are four.

I said last year, and I say it again to-night, that if Dr. Buckley, Dr. Hinkins, Dr. Noyes and Dr. Peck will only agree to it, I will make another, and any one else who wants to come before the society and demonstrate the different methods of bleaching teeth, which will be far more important and of greater value to the members than any hair-splitting discussion between Dr. Noyes, Dr. Buckley and myself. That is what the society needs. If you will take half a day, and these gentlemen will agree to it, I will do my part of it, and I know Dr. Buckley and Dr. Noyes will be glad to do theirs. Perhaps next February would be a good time for this demonstration, when you are going to have a big blow-out. If they will do that, it will be much better for the society and for the world at large than a dozen or more papers on the subject.

DR. G. V. BLACK:

I did not expect to be called on to say anything upon this subject. I came to listen, not to talk. But I must say that I am very much interested in the paper and am always glad to see the younger men coming forward and taking an active part in these discussions. This is a great subject, a very difficult one, a subject which is still in its empirical stage and perhaps will remain so for some time to come, unless some one is willing to spend a good deal of time digging.

The discoloration of teeth doubtless is caused in various ways. I have seen a number of them become red over night. These teeth may go through various shades of coloring. I take it that whatever

may be the explanation of the change in color it occurs from the coloring matter of the blood. It is true, we have other discolorations that occur differently. The bacterium termo and others, which we are liable to find in pulp chambers where the cavity is not freely opened, produce sulphuretted gases, and sometimes we smell these very distinctly, and in these cases we will be liable to get more of the iron compounds. It is not an easy matter to project these solids into the tubules of the dentine. I have had some experience with that. I believe Carl Röse was the first who succeeded in filling tubules with insoluble coloring matter. He did this by suspending an impalpable powder in a liquid and boiling until the tubules were emptied, and then allowing it to cool and drawing in the material into the tubules in this way. This must be repeated over and over again. I have done it myself a number of times and I assure you it is no light task to fill the dentinal tubules with coloring matter in this or in any other way that I know of. Decomposition by microorganisms does not occur immediately in the dentinal tubules themselves. Miller has made an investigation of this and does not find microorganisms in the tubules under these conditions; that is, the microorganisms that produce decomposition. Many of the microorganisms are small enough, but they are in too close quarters to live and thrive in that position. They are choked in their own excreta, consequently, in trying to find microorganisms in the tubules under these circumstances we fail. Dr. Miller found a few, occasionally one, in the tubules; but that was all. Other microorganisms that form acids that are taken up and changed by combination with lime salts can live in the tubules so long as the acid is taken up and eliminated in that way. So we find difficulty in accounting for decomposition in this position. It is a solution first and decomposition products afterward, undoubtedly. Certain colored solutions will pass through and be taken up by the contents of the tubules and color them throughout in a very short time; they are taken up by absorption directly.

Now it seems to me that if we wish to get further than empirical methods we must undertake laboratory methods. I do not know how soon we will find some of our young men who will undertake this work and follow it out. But it will be a thing for some one to do, some one who is skilled in chemistry particularly, and also in bacteriology. Both of these means must go hand in hand in the study of this subject; and yet we have these discolorations of teeth

independent of microorganisms. It is not altogether the decompositions produced by microorganisms that cause discolorations of teeth. Of course, we have these discolorations produced by the use of medicaments. The handling of any of the oils, particularly those which produce resinous or camphor compounds, may cause discoloration by improper use, and I might say that in the handling of any of these oils one essential thing is that the cavity be not open to the fluids of the mouth at all after the use of the oils. You may produce discoloration very rapidly where you allow oxidation to occur after the use of the oils. If the cavities are properly sealed we cannot produce discoloration in that way. That is an important point, and one which should be well known by everybody.

DR. TRUMAN W. BROPHY:

I have very little to say, but while Dr. Noyes was speaking he did not outline the reasons why the red blood corpuscles themselves did not enter the dentinal tubuli. When we realize that the tubuli of the dentine measure about one forty-five-hundredths inch in diameter, and a red blood corpuscle one twenty-five-hundredths inch in diameter, it is impossible for a blood corpuscle itself to enter the tubuli. So it must break up into the elements of which it is composed, hematin, in solution, as Dr. Noyes stated, then find its way in the dentine, carrying with it ferric sulphide or some of the elements of iron.

I was unfortunately late in getting here, so that I did not hear the excellent paper of Dr. Buckley except in part.

In speaking of the elements that discolor teeth in the form of remedial agents, one of the most potent ones in bringing about this change is the oil of cassia. In his experiments in the use of the essential oils in teeth, Dr. E. Lawley York, formerly of this city, but now of Berlin, Germany, demonstrated conclusively that oil of cassia would penetrate everything in the tooth except the enamel, passing through all of the inorganic matter, dentine and cement, going through both from the pulp canal and penetrating the pericementum and entering the bone without. So the oil of cassia, when introduced into a tooth canal, will pass entirely through the dentine, the cementum, produce pericementitis by its irritating action, and then go still further on into the bone which forms the alveoli of the roots. Therefore this agent, I think, should be excluded from the armamentarium of the dentist in the treatment of tooth canals, and I feel pretty well satisfied that the preparation that

has been very long used, as suggested by Dr. Black, 1, 2, 3, containing oil of cassia, will do harm in the same way. I feel it should not be used for this purpose. We have other agents that will accomplish the end we seek which will not and cannot do the harm that oil of cassia does.

My attention was first called to the discoloration of teeth by the action of oil of cassia by Dr. A. H. Fuller, of St. Louis. He suggested that a tooth would discolor under its action even though its pulp was not exposed. As it was formerly used for wiping out cavities prior to the insertion of fillings, oil of cassia would discolor a tooth and cause it to be decidedly darker than its fellow, even though the pulp was not exposed. Moreover, it would produce a pulpitis in a tooth into whose cavity it had been inserted, and thereby cause a great deal of discomfort to the patient and sometimes marked congestion and possibly strangulation of the pulp. As to whether that really would occur or not, I cannot say. But this much I do know, that it will produce a marked discoloration of a tooth when placed in the cavity, although the pulp has not been exposed. As to how to get rid of the discoloration brought about by the action of oil of cassia and of other agents capable of producing discoloration of the inorganic substances of the teeth, I do not know. It seems to me that would be the most troublesome phase of tooth discoloration to deal with, and I hardly know what agents could be employed to counteract the effects of cassia or iodine, if you please, if any one should use them, or any of the substances that are capable of causing discoloration of teeth. We know how to destroy or to neutralize some agents, as sulphuretted hydrogen gases, that find their way into the tubuli as the result of breaking up of the tooth pulp into the elements of which it is composed, yet with that we are sometimes taxed to the utmost.

demonstrations in this particular line. I think all dentists of to-

What we need, as Dr. Harlan has stated, in his speech, are some day, who have had a large amount of experience in the management of discolored teeth, whose pulps are being destroyed, though skillfully and quite satisfactorily bleached, realize that they will become dark again by and by in many instances. They do not in all cases remain bleached, and I do not think that the Odontographic Society could do better than to have a series of clinics some of these days and have Dr. Buckley, Dr. Hinkins, Dr. Noyes, Dr. Harlan and others who are doing this work, who have thought it

out more carefully than some of us, to give demonstrations, not to several hundred or a thousand dentists, but to a limited number, so that all of us can see. Let us have some demonstrations among ourselves, and then we can tell the multitude about the results. I think it would be a good plan to set aside a day between now and the first of May and have some of these demonstrations made in Chicago among ourselves, then we will know more about it from a practical point of view.

DR. GEORGE W. COOK :

I do not think I have anything special to say. However, since I have been called upon, I wish to say that I am a little bit in doubt about iron being such a factor in the process of discoloration of teeth, because we only have about one-sixth-hundredth of one per cent of iron in the blood, and when we confine a small quantity in a pulp chamber that is normal, it would make but a small amount of iron. I think Dr. Noyes hit the keynote in regard to the hemoglobin and the decomposition of that proteid compound. The action of microorganisms on blood ordinarily, as it occurs in the pulp chamber, is very peculiar. If you take blood and seal it, grow anaerobic microorganisms on the blood, peculiar changes will take place in the tube. These changes are not visible ordinarily in the decomposition of blood, and the fact of it being so complicated is a problem that can only be solved, in my opinion, by series of experiments and laboratory work requiring considerable expenditure of time. However, I believe that Dr. Buckley's presentation of the subject is simple and clear. He has presented it in an admirable manner, showing the results in a simple form, and making it easy in a practical way; but to determine scientifically how this process is done, it is going to take prolonged investigation, and the fact of devoting a day or two to demonstrations would be practically useless. If it can be demonstrated after six months' hard work in the laboratory, we may consider we have done a great deal.

I recall the first time I heard Dr. Harlan speak about discoloration of the teeth, and most dentists have been talking about it ever since, although the subject stands to-day about where it did some years ago. The blood is a complicated organic substance in itself, containing many elements, and when it is acted upon by microorganisms, a great many changes take place, and the different stages of decomposition will have to be worked out.

Dr. Buckley brought out a very important feature in referring to certain fatty acids that are formed in the process of decomposition. In the decomposition of organic substances by microorganisms fats are changed to a much lower form of fatty acids than under the normal action of the enzymes in the secretions of the mouth and the intestinal tract. The sulphides, which may be formed in the decomposition products, enter into these fat globules.

DR. G. V. BLACK:

I would like to say a word or two in reference to oil of cassia. Oil of cassia being an excellent antiseptic has naturally been very much abused. It has been used for wiping out cavities where the pulps were alive. It should not be used for such purposes. Oil of cassia in bulk should never be put into a pulp chamber unless the apices of the root have been sealed, because it is a considerable irritant. Oil of cassia bound on the skin will produce a blister, and is not a substance that should be used in pulp chambers. I am speaking now of oil of cassia, pure and simple. I have pointed that out over and over again; that such use of oil of cassia is an abuse, and yet we may seal it in a tooth any length of time without producing any discoloration if we will not allow oxidization to go on by leaving the cavity open; or we may wipe out any number of cavities and produce no discoloration of the teeth if the cavities are perfectly filled. But we may produce irritation. I want to make this statement that we may be understood in this matter, that oil of cassia should not be used in any such way. Oil of cassia, one-sixth part, with two parts of carbolic acid, and three parts of oil of wintergreen, is entirely a different thing. We have a different compound. We have something different than the original elements entering into it, and we will not get discoloration of teeth from this compound, unless one should place it repeatedly in a tooth and leave it open.

DR. BUCKLEY (closing the discussion):

I have only a few words to say in closing. I was especially gratified at the remarks of Dr. Noyes, because he spoke of that phase of the subject which I wanted discussed. The whole question of bleaching teeth successfully hinges on knowing what there is in the tooth structure that we want to destroy. Dr. Harlan stated a year ago and again to-night, that the true theory of bleaching teeth was to render the coloring matter soluble. By getting it soluble we can easily wash it out. That is the main phase of the sub-

ject of bleaching teeth. Now, we cannot tell how to render a substance soluble unless we know definitely what that substance is.

Dr. Noyes has spoken in the same trend as a review which was written on my previous paper, and it seems to me he must have read that review, judging from the general tone of his remarks. I stated definitely that I believed the compound which resulted from the decomposition of the pulp, air being excluded, was ferrous hydroxide; and that when we admitted air through the cavity of the tooth, or from any other source, that ferrous compound was changed into a ferric compound. The theories that are advanced along this line must be confirmed by clinical experience, as Dr. Hoff has said. We have got to confirm every theory by clinical observation and experience, and if you will take the trouble (and it is an interesting trouble) of studying the array of colors produced by the oxidizing of ferrous hydroxide into the ferric form, you will see every shade presented in them, varying from the ferrous to the ferric, that you will observe, from your clinical experience in the different colored teeth. In the treatment of putrescent pulps you will find teeth that will not be discolored when you begin the treatment, but the patient will return with the tooth presenting a greenish or bluish cast. You continue to treat the tooth; it gets darker; you fill the cavity, and in time the tooth turns yellow. Now, a yellow tooth is the hardest tooth to bleach we have. The yellow color, it seems to me, comes from ferric hydroxide, which is a reddish-brown pigment, if we can call it a pigment. If it is true that ferric hydroxide produces a yellow color, why is it that a yellow tooth is so difficult to bleach? You take a black tooth, discolored from ferrous sulphide, and you can oxidize the compound by nascent oxygen, into ferrous sulphate, which is soluble. You can wash the tooth and remove it. But you take ferric hydroxide, which stains a tooth yellow and oxidize it, and you have a form of iron rust, which is still an insoluble compound. If you do not remove it mechanically it remains; you cannot remove it by oxidation. You do not remove it chemically, unless an acid is employed. In using sodium dioxide, which is so valuable, caustic soda is produced which will saponify the fatty acids Dr. Cook spoke of, and form a soluble soap. By washing out that soap in the tubuli, you can mechanically remove the ferric oxide.

Dr. Cook has underestimated the source of iron. I know there is not much iron in the hemoglobin, and I know, too, that there is

not much blood normally in the pulp. But when these pulps are irritated, and die, we have not only a plastic exudate present there, which is composed of blood corpuscles, but we also have an abnormal amount of blood which produces congestion. So, it seems to me, Dr. Cook and others have underestimated the source of iron in these putrescent pulps.

I have thought something along the line of discoloration of teeth from oil of cassia. I mentioned in my paper that we ought not to be called upon to bleach teeth other than those that are discolored from the decomposition of the pulps. If you insert an amalgam filling, polish it, put in a cement base, etc., you will not have discoloration from the amalgam if you use good amalgam. If you treat a pulpless tooth, especially an anterior tooth, with remedial agents, which will not stain the tooth structure, there would be no need of a method of bleaching teeth which were stained by remedial agents, but unfortunately some of us persist in improperly inserting amalgam fillings and in improperly treating pulpless teeth. The main constituent of oil of cassia is cinnamic aldehyde, and this aldehyde can be oxidized into cinnamic acid and two distinct resins. The latter, when exposed to light, turns dark, and this no doubt causes the yellow color which comes from the oil of cassia in the treatment of teeth. As Drs. Brophy and Black have said, it should never be used in the pulp chamber or root canal of a tooth.

I have presented this subject and this theory not only for the purpose of eliciting discussion, but for the purpose of inducing some one else to work along this line. We have a series of complicated problems connected with the *true* cause of the discoloration of teeth from putrescent pulps. I have advanced a theory, which clinical experience will confirm, and I trust some one else will take up the subject, and not do as Dr. Noyes has done to-night, and some of my other friends have done, by saying that they think it is possible for a complicated compound to be produced. I do not like the words "complicated compound." I wish they would name definitely what that complicated compound is, then we could see whether clinical experience would prove that that complicated compound is produced. We want to know something definite about the discoloration of teeth.

NEBRASKA STATE DENTAL SOCIETY.

The following papers were read before the Nebraska State Dental Society, May, 1902:

THOUGHTS OF THE PROFESSION.

BY DR. W. H. STEELE, HASTINGS, NEB.

I might have selected for my subject something more practical, and that would have called forth an interesting discussion from the intelligent members of the profession here assembled; but leaving those subjects for others better prepared to handle them, I shall bring up a few points bearing more directly on the business side of our profession.

Very few young men, when locating in a new town, realize how their every act from the furnishing of the new office, to the collection and paying of their bills, is watched and weighed, by an ever-observing, critical public. When a patient steps into our office for the first time an impression is usually formed for, or against us, and a tidy office has much more to do with the forming of this first impression and our future success, than we have any idea of. Our patients are more observing than we sometimes suppose, and notice things that reflect unfavorably upon us, hence, we need to be continually on the alert, and see that ourselves, our office appointments and instruments are such as will bear scrutiny and defy criticism. One may not be so financially situated that he can furnish an office elegantly, but there is no excuse for dusty furniture, unswept carpets, bespattered spittoons, and dirty instruments. A dentist who is particular about keeping his office and its appurtenances neat and orderly, is likely to be particular and thorough with his operations. The public know this, and it is a strong point in gaining public confidence and patronage. While a pleasant, well equipped office is a good introduction to a new patron, it requires much more than this to gain their confidence and respect and retain them. It demands integrity, cleanliness in all operations, thorough manipulation, artistic skill, kindness and courtesy. Many a good patient has been lost on account of a bloody spittoon, or a bill, that had run so long, that the charge was thought exorbitant when finally presented for payment. There is no profession in which the personality and artistic skill of the man cuts any more important figure than in dentistry, and the dentist possessing these qualities need not advertise his superiority through the press. His work gives every day

unwritten evidence of his ability far more telling than anything that could be accomplished through the use of printer's ink, and its veracity cannot be questioned by the most skeptical. Too many dentists, especially in the early part of their career, make the mistake of relying too much on the distribution of printer's ink for the building up of their business. Let any enterprising, talented, incoming young member of the profession take the pains to instruct himself on the business methods of those dentists who have come out best, both financially and in reputation, after a twenty-five years' career, and see whether the successful men were those who relied on printer's ink. I think that he will find that those who have attained the greatest success are the ones whose aim has always been to do first-class work, work such as they might feel proud of, and at prices that remunerated them for the labor and skill which they bestowed upon it. Such methods require a little more time to build up a business, but they are sure to win the support they merit. The moral effect of a bank account on a man's business success cannot be overestimated. No man can do his best when his mind is distracted from his work. "Worry dries the blood more than care or sorrow," therefore it is essential, if a man would at all times be in a position to put forth his best efforts, that he be pecuniarily independent; that his finances and his credit be so perfectly established that a season of depression in business shall lose its terrors, and that worry at least from this source should be an unknown factor. It is easy to meet bills when business is good, but when poor it is a source of worry which affects the temper of the man and the quality of his work; he loses his feeling of independence, and unless he is an actor of more than moderate ability, this fact will soon become apparent to his patients. The only remedy for this evil is a bank account, that can be built up in good times and drawn upon when business is poor; by this means we will always be able to meet our patients with a smiling face and put forth our best efforts, instead of worrying about butchers' bills, tailors' bills and rents. Many bright young dentists who locate in the smaller towns are in danger of getting into a groove. They are fresh from school, up to date in methods and soon get a good practice, but are liable to become avaricious and devote too much of their time to the business side of the profession. They do not keep read up, do not attend the dental societies, and about the time they should be at their best they are twenty years behind the times.

Young Dr. B.— comes in and locates across the street; practice begins to drop off, and the old doctor awakens to the fact that he will have to move West and locate in a smaller town. We older members of the profession have all seen many such sad failures. The way to avoid it is to keep up with the times; take the dental journals; take an active part in your State and district societies, and thus avoid fossilization.

THE STATE BOARD OF DENTAL EXAMINERS.

BY DR. W. N. DORWARD, OMAHA, NEB.

My subject (The State Board) is one that should interest every member of this society, and not only you but every licensed dentist of the State, but it does not do so in the manner in which it should. You are inclined to rely on the fact that there is a dental law which in some manner without your assistance will enforce itself, or that the State Board will do so, without you in any way personally affording the board the assistance it should have.

We meet yearly as a society and the fact is mentioned that "So and So" is practicing dentistry without a license, but how many of you have ever tried to enforce the law, or be willing to swear to an information if the board started to prosecute a person practicing dentistry without a license? Not many.

You are perfectly willing for the board to do this, but you are not willing to assist, for fear you may antagonize some one in your vicinity. I want to say to you, gentlemen, it is your duty, not only to inform the board of persons practicing without a license in your neighborhood, but to lend your best efforts to assist the board in prosecuting such persons to the full extent of the law.

In that way only will we ever rid the State of unlicensed practitioners, and it is the duty of every member of this society, and licensed dentist in the State when they know of any one practicing contrary to the law to inform the county attorney of the county in which they reside, and swear to an information against them. At the same time notify the board so that when the case comes to trial some members of the board may be present to assist in the prosecution of the case.

We should get together and make a united effort to uphold the law and protect the public and every licensed dentist from being imposed on by illegal practitioners.

Our present law is inadequate in many ways and the movement now on foot by this society to secure a better one meets the approval of the present board, and I can assure this society of their hearty coöperation to have a more efficient law passed at the coming session of the legislature.

The National Association of Dental Examiners are and have been for some years working to secure a uniform dental law in the United States, so the license of one State would be good in every other State in the Union. This condition exists in some of the eastern States now, but it will take years of effort to obtain the results desired by the National Association.

Your present board is heartily in favor of such uniform law, and will render the National Association such assistance as we can, and we hope to have the coöperation of this State society in our efforts.

Gentlemen, I present this matter of the State Board before you, and I hope to hear a full and free discussion on the subject, that the board may profit thereby and through such discussion we may be enabled to render more efficient service to the profession of the State.

CAPILLARY ATTRACTION—A FACTOR IN GOLD AND AMALGAM FILLING.

BY DR. A. C. HEWETT, CHICAGO, ILL.

I think it needs no argument to prove that recurrent decay usually, if not invariably, follows the best operations in dental repair with either gold, or the so-called (old formula) amalgams. Dr. Conrad, of St. Louis, Mo., a skilled gold operator, as I can testify from personal observation, also a very close observer, says that an amalgam filling "will always show recurrent decay within four years."

Dr. G. V. Black has stated that "The average usefulness of amalgam fillings does not exceed four years."

Dr. E. K. Wedelstaedt, who as an amalgam student and operator needs no commendation from me or others, says: "We now know definitely when a cavity in a tooth is prepared and filled without altering the conditions which led to the first decay that it is but a question of time before recurrence of decay takes place. Where there is not an alteration in the conditions which led to the disease an opportunity is left. In such cases it is simply useless to do the work, for failure is but a question of time." As is his habit he speaks

and writes vigorously. He does not hesitate to say "spade" when that is what he means. A fair interpretation of the able article on amalgams (American System of Dentistry, Vol. 2, p. 218 et seq.) supports the assertion. I doubt if there are not some before me who have been pained to observe some of their own honest endeavors thwarted within a brief period. I have not the courage to assert to you that like experiences have not been mine, with both gold and amalgam.

Very much has been spoken and written explanatory of such failures; many schemes devised as remedies. "Extension for prevention," among the latter, which with its rhythmical swing, has the advantage of the earlier phrase, "*Extraction* for prevention."

It is not the design of this paper to review what has been spoken and written concerning causes of caries in teeth, primary or recurrent, but to bring forcefully before you as I may, one cause hitherto unnamed, as far as I know; one fully the "*equation*" for any and all causes combined: I mean *capillary attraction*. I have hitherto hinted at it, in private conversations, in discussions at conventions, and in the journals, but those hints were tentative, rather than assertive or argumentative. As a result of much study, and careful experiment I am thoroughly convinced that no one other factor is as potent in perpetuating caries once begun, or in causing recurrence to thwart elaborate efforts, and costly undertakings looking to permanent repairs in teeth. Thus believing, I find great consolation for my failures, and cause for encouragement. I was honest and earnest in my labors, and the failure caused me deep regret. That I did not sooner detect this cause and learn the remedy, may be in part excused because of my environments, and because I was not endowed with omniscience. For your consolation and encouragement (if any have had failures) I say, and wish to be believed that for the last ten years (now nearly eleven) recognizing said equation, and applying the remedies which I will give you I have not found a case of recurrent decay, either in my gold or amalgam fillings. Others may have found them, but not to my knowledge. Ten years are not twenty, or forty, but since the date of changed theory and practice successes have been gratifying. I hold no patent for opinion or practice. If I can aid you as I have been helped I shall feel as if I have not lived in vain. Besides when the explanation is made clear, and the practice plain as I hope for, there is nothing wonderful, or passing belief.

WHAT IS CAPILLARY ATTRACTION?

Webster gives it "Attraction causing a liquid to rise, in capillary tubes or interstices, above its level outside, as in very small glass tubes, or a sponge, or any porous substance, when one end is inserted in the liquid; it is a condition of cohesive attraction." Webster does not, nor does any other lexicographer, measure its tremendous, almost resistless force; nor show how cunningly the Great Artificer has devised methods, valves, cut-offs, and anastomoses, to aid its exercise of resistlessness. First listen to your memories as you turn the leaves of your "advanced" natural philosophy and recall the hydrostatic pressure of a column of water $\frac{1}{2}$ " in diameter and 100" in height. Did you ever try the experiment of "gas-pipe and barrel," the former 100' high, the latter "oaken staves," "iron bound"? As you get the column of water 50 or 75' high, do you remember how the water would ooze, bubble, hiss and strain head, stave and bung? As you double the height of the water column, did you think yourself safe from douches, to say nothing of oaken splinters? Then go with me in imagination to the Mariposa Valley, stand at the foot of some giant Sequoia, look up and up two, three, and four hundred feet; reflect that thousands of perpendicular tubes of soft wood are filled with water drawn through absorbing rootlets into and along huge roots—"foot arms" of the giant, under tons of rock and earth, thence up and higher to the topmost cone-laden, needle-decked bough. Answer me, is there not strategy of method and power, nearing the illimitable in capillary attraction? Do you believe for a moment that the hydrostatic force of the human heart muscle drives the red and the white blood of the human supply through miles of arteries, veins and capillaries into tubules of dentine, among enamel rods of teeth, amidst medullary and cancellated osseous tissues, synovial membrane and ligament, into nails and hairs, among reticulæ of gland, follicle and nerve, unaided by capillary attraction?

Try two experiments. 1st. Suspend a dried piece of ivory (first weighing it on diamond scales), one end for about one inch immersed in water, the rest of the ivory above water wrapped in rubber dam to prevent evaporation. Keep this lower end-inch submerged for about two weeks. Then reweigh the ivory, noting the difference in weight.

2. Procure a sound cuspid tooth that has been extracted, laid away and dried; weigh, wrap and suspend the tooth and immerse

the crown to near the gingival border line of enamel; take care not to moisten or submerge any portion of dentine, macerate the cusp for a week or ten days. Then wipe the cusp dry, reweigh and note what you will find.

If you doubt the permeability of dried ivory and enamel, after the foregoing tests select a tooth with approximal cavity, recently extracted, excavate the cavity *secundum artem*; provide "extension for prevention;" bevel the borders, absorb moisture from tubules and enamel rods with chloroform, or absolute alcohol; desiccate with hot air; and with the best of brain, fingers and endurance, fill the cavity with gold, or some silver-tin alloy; place the filled tooth in artificial saliva, keep the tooth in the same at a normal body temperature for a week. Then remove tooth from said fluid, wipe surface dry, cut or break the tooth or dislodge the filling. Apply the microscope, and see if you can find a spot in the cavity void of moisture. After those experiments, read the directions of Black, Johnson, Miller, Ottolengui; and I'll not forbid my earlier articles. Place them aside of the teachings of scientists who aver that where moisture foreign to dentinal structure penetrates, microbes abound, and decay is imminent, and wonder, if you can, at recurrent decay.

I frankly confess to you that in view of my experience gained by such and other investigations, the deepest sympathy of my nature goes out to the young man thus battling with the seemingly impossible. I am astonished not at his failures, but at his successes.

Perhaps Drs. Black, or Johnson, or Ottolengui can beat gold, with flat-footed, serrated pluggers onto tubulated dentine, and enamel rods so closely that all oral moisture is excluded, at *all points* of angle and border, but I frankly confess that I never could, by any process, by them, or either of them described, construct an impervious cofferdam. The microscope is a wonderful revealer of defects.

Let me suggest to you for a moment the *problem* you have to *solve*, and then recall this equation "capillary attraction"; give it its full weight, or your neglect will tell against your operation, in failure, as disheartening as many of mine have been.

The cavity to fill, a distal, proximating an inferior left third molar in situ; cavity extending below the gingival enamel line; occlusal enamel entire and strong. Middle and gingival thirds of buccal and lingual enamel walls thin. You have a wounded surface of dentine with no repair-exudate from tubule mouths. Did you

ever think of it? Flesh cut has its sanguineous plasma; so has bone, synovial membrane, ligament, nerve and dentinal pulp. Who is the writer that has named dentinal plasma for scar tissue?

Patient, with eyes coal black, or buttermilk blue; mouth made after the pattern of a German carp, or a *Grande Marais* sucker; muscles of the mouth like strained rubber bands. Use "extension for prevention" galore, apply and screw home double inclined planes for separation, regardless of pain and inflammatory sequelæ, then proceed to fashion, anchor and coapt artificial dentine and enamel, imitative of creative strength and impermeability, using serrated, flat-footed pluggers, on gold, as taught by the distinguished gentlemen I have named, and by other gold workers whom I might name, or, if you prefer, use any of the so-called "silver-tin" alloys that do not even claim to carry germicidal or antiseptic prophylaxis.

Now I assert without fear of proof in contradiction that the man does not live who can, nor has he lived who could build gold in such a case and position (and there are many worse) so densely and so closely upon tubules, enamel walls and borders, that moisture could not permeate the gold, and creep between it and tooth structure, drawn thither by the wonderful force I have tried to describe, *capillary attraction*. To convince yourselves that I am correct, fill such a cavity as I have done, following the teachings of authority. Leave it a month, or longer, then extract the tooth as I have done, break open the tooth, apply the microscope and learn as I have learned.

Are we then without hope? I tell you *no*, a hundred times *no*. I believe that the old English common law maxim, "*Never a wrong without a remedy*," is as true in dentistry as in law. I believe in attacking the wrong—seeking and applying the remedy.

I *believe* I have found a remedy for the defects incident to the case I have given you. Please note the emphasis on the word "*believe*." I can only cite proof for the period of a little less than eleven years.

I hold no patent on the remedies. I wish I might give you more, and furnish longer proof.

I do not approve of gold work in such cavities as I named, especially since an amalgam such as I shall describe is obtainable. If gold is to be used then not gold alone but combined as hereinafter described, with resin and amalgam films. If dentine wounded furnishes no plasma, substitute a balsamic one to seal the tubules.

Now please understand me; I do not condemn all gold; I *commend* it, as useful and durable in the sulci of bicuspid and molars, and other cavities accessible to vision and instrumentation, and compatible with human endurance on the part of patient and operator. I do not believe in the wisdom of attempting the impossible.

Do not understand me as underrating the teachings of the eminent men I have named. I approve of "extension for prevention," and hold in high honor the men spoken of. I do not approve the flat foot plugger nor *have* I, since I discovered its defects and devised and made a set with oval faces cut in but one direction and that nearly twenty years ago. I am an enthusiastic admirer of the Royce pluggers. As now made they are great improvements on mine. I approve of his mode of using them. By his method *perhaps* hermetical sealing can be accomplished. I would like to see a microscopical test of his work, for he is a prince among operators.

But to the remedies. In such a case as I have described use *amalgam*. Not of any of the group of old time "silver tin;" no, neither of them, "white" or otherwise, *claim* to possess antiseptic or antimicrobial properties. Select a "white alloy" that is distinctively a germicide, antiseptic and prophylactic, that has a crushing resistance of nearly 1,000 lbs., and consequently great edge strength, one absolutely unshrinking and that can be burnished into place to *stay*.

Amalgams to take the place of gold even in the case cited should be meritorious in a high degree. They should distinguish themselves by being plastic to a degree that they may be burnished into the acutest and smallest angle, and yet so far from a fluid that they will not draw away from wall or angle on the removal of the plugger.

They should be of such consistency that they may be burnished into tubule, upon and over enamel rods and margins, and stay there when once in place; a quality suggested by softened modeling compound, devoid of its stickiness. The alloys should be so compounded that when amalgamated, with sufficient mercury and worked between thumb and finger, there will be a distinct crepitation, creaking, a sibilant tone similar to snow crystals under passing wagon wheels in cold weather. The strongest amalgams I have tested give off this tone in the most marked degree. They should "set" readily (partially) when pressed to place and not disturbed.

As to cavity preparation—prepare your cavity. You need no instruction for so doing. When ready coat floor angle and wall with a varnish of resin (from *pinus sylvestris* I deem best) cut in abso-

lute alcohol. Resin 2 oz., alcohol 1 oz. Allow the varnish to dry a few seconds then with a shot point (smooth) burnish on a film of amalgam to every line, angle, spot and border of the cavity, *enamel edge* and all, as glass is coated for a mirror. Do this well as a preliminary to *building* the amalgam plug. Then do not thrust a large mass upon this first film, but piece by piece as you would with gold, build with direct thrust and burnishing motions, each layer welded to its predecessor, *upon wall* and *enamel*. Leave no angle *unfilled*, no interstice uncompacted or welded and your work will endure.

This may seem but a simple affair, but it is important. The resin overlayed with amalgam, ground in the varnished wall and over tubule mouths, has for nearly eleven years defied moisture and repulsed the assault, of so persistent a force as capillary attraction.

In the same way a coating of varnish of the same (which by the way is largely antiseptic) spread upon a cavity as aforesaid, and a film of amalgam ground into it as above described, gives a foundation for gold work with all the essentials, that for more than ten years has brought success, and this without any blackening borders, dark lines or cleavage so dreaded by the gold worker.

Are these simple methods effective? Are they adequate to the resistance of a mighty force? I have asked myself the question many times.

I have doubted; and to assure myself repeated the experiments, reexamined my work, always with the same result. I show you two teeth filled as I have directed, using varnish first, burnishing on a film of amalgam next, and then adding amalgam to complete the work. The teeth were, one left, and the other right inferior third molars of a young lady. The occlusal sulci of each tooth being the seats of decay and repair. Six years later the patient returned with her mother to have the same teeth extracted. When the teeth were filled the buccal surfaces were sound but with the passing years both had developed buccal cavities from crowns to gingivæ, exposing the pulps of each. Unusual development of strong teeth anteriorly, together with conditions of decay indicated extraction, an operation which both mother and daughter urged, and one to which I was not averse, as I thereby gained a fine specimen of my work. As you will see the central fillings are perfect; the adjacent dentine perfectly preserved, that is the dentine adjacent to the amalgam, even to very thin films in several places. For retained polish of surface, unchanged color of fillings and tooth structure.

adjacent, absence of shrinkage or spherioding, and for continued close coaptation of amalgam edge of enamel borders, there is to my mind the most convincing proof of value of the alloy and also of the processes chosen that I have ever met; and my experience has been an unusually lengthened one. In this case the amalgam chosen has proven itself a worthy preservative. In that I am not mistaken. The method certainly was not harmful.

But some may say, the film of resin left by the alcohol evaporation is a friable one, brittle and has no strength. I grant it, but when you come to burnish down upon and among the resinous particles an amalgam composed of granules, minute nuggets of metals insoluble in mercury while crystallizing, then the weakness becomes strength, by aiding to fill up the interstices of the crystalline mass superimposed. You may argue that a mortar of lime, sand and water is brittle when the water is evaporated; so it is, and the laying of bricks in such mortar is a very simple process, but none of you that thus argue would trust yourselves in a house builded of brick without the mortar.

What would you think of a hydrostatic or hydraulic engineer who, while constructing an aqueduct should refuse to spread a film of Portland cement upon his granite blocks because it is a simple proceeding and the cement thus used is not as strong as granite? You all know that his conduit would leak.

So I know that gold—a solid beaten down with never so much care and skill on to dentine and enamel leaves an interstice that leaks. "Silver-tin" alloys leave just such interstices.

Clay is a simple, very common material, but when driven down between two rows of planking reaching to the river bottom helps to form a cofferdam impervious to water. Will you urge against its use because the clay is a simple substance weaker than the hemlock or oak?

Wise builders choose materials and processes that lead to success and durability. Are dentists as wise?

PORCELAIN VS. GOLD CROWN.

BY DR. T. J. HATFIELD, YORK, NEB.

When an inexperienced writer undertakes the task of preparing a paper to read before a convention the first thought presenting itself is, what shall I say to edify or interest those present or to avoid criticisms? I will promise you that I will make no special

attempt at either, but will hope to succeed in bringing forth sufficient discussion to interest us for a few moments and to fix in our minds a few facts to aid us in our future efforts. One of the easiest things in the world to say upon an occasion of this kind is, "Dentistry is a progressive science," and this statement you will not criticise. In almost every branch of dental science there has been advancement and improvement within the past few years. In my remarks I wish to consider a crown which to my mind is one far in advance of our ordinary banded crown and one that I can recommend to you for use singly or as employed in bridge work. This crown is made from porcelain baked upon a simple disk using a pin to give it strength and attachment. Many of us here assembled can remember when the average dentist knew little of the principles of procedure in crown and bridge work. Some of us would occasionally get a glimpse of a glittering gold crown in the mouth of some individual who had been so fortunate as to fall into the hands and under the care of some eminent dentist, and we would look at that crown with awe. If it was a bicuspid or molar we would notice at once how very artistically it was adjusted. A crown it was, with its four walls parallel, and the occlusal surface flat and smooth without the slightest attempt at contouring or carving of cusps, having greatly the resemblance of a tin cup with the handle gone. If the crown was one of the six anterior teeth, well, excuse me from trying to picture to you its appearance, but we made them, and improved them, until we can duplicate almost any tooth to be found. Yet there are many serious objections to this class of crowns. Therefore we must continue our efforts to improve and progress.

Years ago I attended a meeting of this society at Wahoo. One of the most interesting features of that meeting was a bridge of the six upper anterior teeth made by one of our good brothers from Iowa. It was a success and all was honor to the gentleman who made it. I had been telling my very best patients that bridge work was not a success. What else could I tell them? But thanks to that meeting and to that man, I went home and began making bridges. The first one was not very good, but the second was better, and finally I made a good one. Then I thanked God and took courage. But shall we be content with bridges hung to glittering gold crown, or open-faced crowns or even Richmond crowns with facings backed up with gold, extending over the incisal edge to

prevent the facing from splitting off? Or shall we continue to improve and advance, and bring forth a crown or bridge that is harmonizing in color, pleasing to the eye, strong enough to withstand the force of mastication, and producing the least amount of irritation to soft tissues? These qualifications are found in porcelain work or that part of dental science called *porcelain art*.

Porcelain art applied to dentistry is not a new art, but a very old one. It has not been in universal practice or even considered practical on account of its expensiveness, and lack of development, but recent inventions should place its use in reach of us all. The people are hearing and reading about it, and our patients are demanding it. They have worn out the gold crown idea and we must now make porcelain crowns, bridges, inlays and full dentures. I am going to be real conservative and tell you I do not insist upon dropping the use of gold in bridge work entirely. Gold has its place in that branch of dentistry and will always be used. But for crowns it is different and here I am disposed to be decidedly radical. The dentist whose skill is limited by the making of gold crowns is working to little good and against the best interest of himself, his patient and his profession. I do not say there is no place where a gold crown can be placed to give good service, but I do contend that the occasion is very rare indeed where a gold crown can be used with good results, but that a porcelain crown can be placed with much better results. We should be very careful not to get into the habit of resorting to any one way of doing things, especially in crown and bridge work. The conditions and environment suggest certain methods and often we should use a combination of methods, but there are certain methods that I find more universally practical than others, and I am disposed to describe to you one of my favorite methods of making a crown which will apply to almost any position in the mouth and the simplicity of it is one of its greatest advantages. We will use an upper central incisor supposing that the root canal has been filled with gutta-percha. Cut away the crown of the tooth to the gingival line or lower if caries has advanced beyond that line. If at the gingival line the end of all decay has been reached cut only to this position at this time, but if caries has extended below the gum line remove all decay and cut away the root until the face is square. But we will consider that we are working upon a root cut parallel with the gingival line. With a Gates-Glidden drill remove gutta-percha

from the root canal to the required depth for a post, being careful to note the direction of the canal so that by enlarging the canal the operator will follow the center of the root. At this time select the wire for post. I use iridioplatinum wire round No. 15 for centrals, cuspids and lingual roots of superior molars. For smaller canals No. 17 is large enough. However, select round drill. The size of the wire you wish to use may be ascertained by drilling a hole through a piece of ivory or some smooth, hard substance and trying the wire into it. With this drill enlarge the root canal, being careful to go straight down. Then take a smooth fissure bur, same size, and pass it down the post hole, thus making sure that the opening is not curved. Take the post wire and place it into the root canal and mark the length of post within the canal on the wire. Then remove the post and take a piece of pure platinum plate 36 gauge, that will cover the face of root and punch a hole in the center of it so that the post wire can be forced through it, tight, to the mark, indicating the depth of the post within the root. Solder the two, and place the post in the root again. With a wooden point in an automatic plugger set the disk over the margin of the root. Now remove the disk and the outline of the face of the root will be plainly marked upon the platinum. Trim the disk to this line, being very careful not to cut inside of line. Now take a large sized round bur, proceed to concave the face of the root so that its margin will be entirely below the gums. Upon replacing the disk into position you find the post too long and the post hole must be lengthened or the post shortened. Correct the length of the post and thoroughly burnish the disk to the face of the root. This can be very easily accomplished by using a piece of wood about the shape of a wooden plugger handle, the end formed in a way to represent a die for the face of the root. With an engine bur the same size as the post, bore a hole into the end of this wooden punch. By placing this instrument over the post wire and giving a few blows upon it with the hand mallet the platinum disk can be swaged to conform perfectly to the face of the root. When so fitted and burnished take an impression of the extending post wire and adjoining teeth in plaster which is the most reliable, though modeling compound may often be used. At the same time obtain a bite when it is needed. Remove the post and place it in the impression. Fill in with plaster and obtain model upon which the case is completed. A facing is selected (I prefer Justi's or Consolidated), the pins of which must

straddle the extending post. This may cause the facing to take a wrong position. If so, remove the post from the model and place it in a vise. With a strong pair of pliers bend the extending post into position. Before replacing the post into the model, cut a tunnel in the side of model to the end of the post hole so that no particles of plaster will drop in post hole and prevent post and disk from going to place. Grind and fit facing and in doing this you will not injure the case by grinding the labial surface of the facing as the baking will glaze it over again. When the facing is properly ground and fitted, bend the pins down toward the disk and clamp them around the post, and fasten them with sticky wax. Remove and invest and solder the pins to the post with platinum solder. Pure gold may be used for solder, but be careful not to use an excess of solder, especially if pure gold is used. Do not let post extend below the pins. Place the case again upon the model or even better within the mouth to prove the correctness of the articulation. Often at this time a little grinding will add to the esthetic effect of the crown. To complete the case it is only to be backed up with porcelain body. The baking process requires thought and experience and would take too much time to go into details of explanation. In the discussion I will gladly enter into that part of the procedure, but will say here that after familiarizing yourselves with the baking it is one of the easiest things to do. When the crown is baked and thus completed in detail it will go positively to place and is retained by the tooth structure and requires only enough cement to seal the parts together. When made in this manner you will have produced a real piece of art, covered up by art. When this is accomplished you have reached the summit of our ideals.

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THE CANADIAN DENTAL ASSOCIATION.

The first meeting of this organization was held at Montreal, September 16, 17 and 18, 1902. If the initial movement is any augury of the future, the Canadian profession will have an organization which for effective work will rank with any other national society in existence. The meeting was in every way a signal success. The attendance was large and representative, the enthusiasm high, the program good and the entertainment quite beyond anything we have ever seen at such a meeting. The people of Montreal simply outdid themselves in hospitality. They threw open their homes and welcomed the profession with true Canadian cordiality. They took us to the summit of Mount Royal, the view from which is worth traveling leagues to see, they piloted us down the Lachine rapids, they held receptions, and they never seemed to tire. All in all, the occasion was a rare treat, and those who attended will not soon forget it.

But probably the most significant thing connected with the meeting was the movement inaugurated toward the formation of a Dominion Dental Council. The plan is to link together the profession of the various provinces by the establishment of a general council made up from representatives of the profession in the different provinces and territories, and this council to establish a dominion standard which shall finally be accepted in all of the provinces and territories of British North America. It is believed that if this is once accomplished along the most approved lines, it will finally lead to a recognition of this standard on the part of the imperial government in England, so that a greater unity of requirements and a closer reciprocal relationship shall exist between the mother country and the colony.

Most of the papers read upon this subject at Montreal were heartily in favor of such a scheme, and while it is a large under-

taking and will require some time and much labor to carry it out, it is to be hoped that eventually it will become an established fact. In furtherance of the plan a committee was appointed with representatives from each province and territory in the dominion to consider the matter in all of its bearings and report later to the general body.

The next meeting of the Canadian Dental Association will be held in Toronto during the summer of 1903, and it is to be hoped that not only from all parts of Canada but from the United States as well a representative gathering will assemble to place this young national association upon a firm footing. Visitors may be assured of a royal welcome on the part of Toronto dentists—a body of men who are never found wanting in hospitality and fraternal good fellowship.

ORIGINAL RESEARCH.

The letter of Dr. E. K. Wedelstaedt in this issue calls to mind the need of greater knowledge concerning the relative strength of the porcelains we are using in dentistry, and it is time some one took up this line of study. But the significant thing in this connection is, that the burden of such investigations as these should not fall on any one man singly as they so frequently have in the past. The profession should not look to a few men to make the sacrifice of time, energy and money necessary to test all of the various materials offered for sale to dentists. There should be some better and broader way of getting at it, some central laboratory sustained by the profession where tests of this kind may be made and the results given to the profession.

Several attempts and suggestions have been made in the past tending in this direction, and there is hope that eventually we will have such a place where investigations may be carried out with absolute impartiality and without the individual drain on a few men which has always marked this kind of work. Any effort tending toward the establishment of such an institution should have the cordial support of every man in the profession. Not till some such movement is made can we truly be called a beneficent profession in the broadest sense of the term, nor do justice to the example set us by the faithful few who have carried the chief burden of scientific investigation too long.

THE EDITOR'S DESK.

MY TREE.

I have a tree somewhere by the roadside—the exact spot does not matter. We are the greatest of friends, and I go to see my tree every summer. If a season should pass wherein I was not permitted to visit it, I should count it quite a calamity—so also I am sure would the tree. I do not remain long with my tree when I visit it; in fact, I merely drive past it on the highway. But we are so well acquainted, and understand each other so perfectly, that we visit a vast deal in that brief space.

The moment my horse's ears are seen bobbing up over the rise of ground approaching the spot, this beautiful leafy friend of mine begins to exhibit unmistakable evidences of a delightful agitation. It sends me a salute as far as it can see, and grows more and more demonstrative as I approach, till by the time I am quite come up with it the air is fairly musical with its ode of welcome.

It begins with a rushing swell as if tuned by the mighty Jove, then sighs softly into a whispering melody full of the sweet secrets of buds and birds, and sinks at last into a hushed suspense, tremulous with emotion. Then again in rhythm with a sweep of the wind it breaks out into a rousing chorus of acclaim, and frantically waves overhead a myriad bright little banners in honor of the occasion. Oh, what a moment is this for me as I slowly pass by my tree and see all the excitement and celebration because of my coming!

If it were not that people might account me mad—people who do not understand the beautiful sentiment of trees—I should assuredly raise my hat and wave it in answer to the splendid tribute. As it is I must content myself with uttering a softly murmured benison, and although the words are seldom fairly spoken, yet the tree knows full well what I mean, and bids me Godspeed in turn. Its farewell bow as I meet a bend in the road—a bow graceful as ever were made in my lady's parlor—sends me lighter hearted on my way, and makes me feel a better man because of having had this communion with the tree.

The last time I passed the spot I was pained to find that some miscreant—some defiler of things divine—had, with an ax, cut a

great gash in the side of my tree, leaving an ugly scar, with traces of tears running down its trunk. Poor, puny, insignificant man! clothed with a petty, transient power, I would that thou wert made to see the full measure of thine iniquity.

Another man in years gone by—a man devoid of grace and harmony and tenderness of touch—was guilty, I find, of sinning against this tree. It was the man who took it upon himself to name it. He called it the *hard maple*! As if there were anything hard about such a tree as this—except the soundness of its heart. And even this must not apply, for while it may be sound hearted, I affirm it never can be accounted hard hearted. This tree is the softest, most musical, most beautiful of all trees, and had it been given me to name it—knowing as I do its wondrous charms of form and shade and sentiment—I should have called it a “poem in gray and green.”

BIOGRAPHICAL SKETCH.

VIII.

ELEAZAR PARMLY, M. D., D. D. S.,—TRAVELER, DENTIST,
EDITOR AND POET.

BY BURTON LEE THORPE, D. D. S., ST. LOUIS, MISSOURI.

Eleazar Parmly was born in the village of Braintree, Vermont, March 13, 1797. He was the third of five sons of Eleazar Parmly, a farmer of old New England stock, four of whom (Levi Spear, Samuel Wheelock, Jahial and Eleazar) afterward became dentists.

His early youth was spent on his father's farm, attending country school during three months each winter, until he reached the age of twelve years, when he went to Montreal to school, remaining there until the war of 1812 compelled him to return to his native village. At the close of the war, his parents emigrated westward, locating at Perry, Ohio, on Lake Erie's shore.

“Where with scanty means and stinted daily food,
He helped his father—felled the trees and burned the heavy wood,
No aids to meet this forest, dark and dire,
But naked hands, ambition, axe and fire.”

Clad in linsey-woolsey, helping clear the rough land and plant and care for the crops, he found time to work with tools, an unusual aptitude he inherited from his father.

When thirteen years of age he made a dove-tail clothes chest in hardwood that was a very creditable piece of work, showing painstaking and patience. He was studious, and at sixteen passed a successful examination for district school teacher. His success was such that at the close of the year he was voted extra pay. His experience as teacher he always considered the most useful formative period of his life, many of his pupils being older than he, which materially developed him.

At seventeen he learned the printer's trade, beginning as assistant, compositor and reporter upon the first newspaper published in Montreal. About the time he reached his majority, he began the study of dentistry with his elder brother, a young dentist of Boston, Levi Spear Parmly, to whom he was largely indebted for some of youth's noblest impulses. Levi had received his early instruction from a Dr. Petrie—an English dentist—and later from Dr. John Randall of Boston, whose advice and friendly interest contributed to his future professional success.

Young Eleazar was first employed in carving and making teeth from the tusks of sea-horse in his brother's office. After several months at this work he went to Quebec, remaining there a short time. Ambitious to gain more knowledge of the profession of his choice, he decided to make a tour of the Western and Southern portion of the United States. He was accompanied by his brother Levi while on this tour, which lasted four years. His main work consisted of extracting, cleaning, making artificial teeth and filling teeth with tinfoil. In his travels he met patients of Mr. George Waite of London, L. Koecker, H. H. Hayden, and Edward Hudson, all of whose work was skillfully executed. The work that impressed Parmly most in these patients' mouths was the gold fillings of these men, the first of the kind he had ever seen.

At Lexington, Ky., in the mouth of a Frenchman, he saw for the first time a mineral tooth which he thought far superior to teeth carved from sea-horse tusk or cattle's teeth secured at the slaughter houses. At New Orleans he also saw a gold plate that had been swaged to a model, the work of a dentist in London. These operations excited Parmly's admiration for the possibilities of his art, and an ambition to improve himself, and, in 1820, he embarked for London, with the desire to gain further knowledge. Upon his arrival, he procured all the books on dental surgery published in the English language, but in the reading of these he gained little information, as

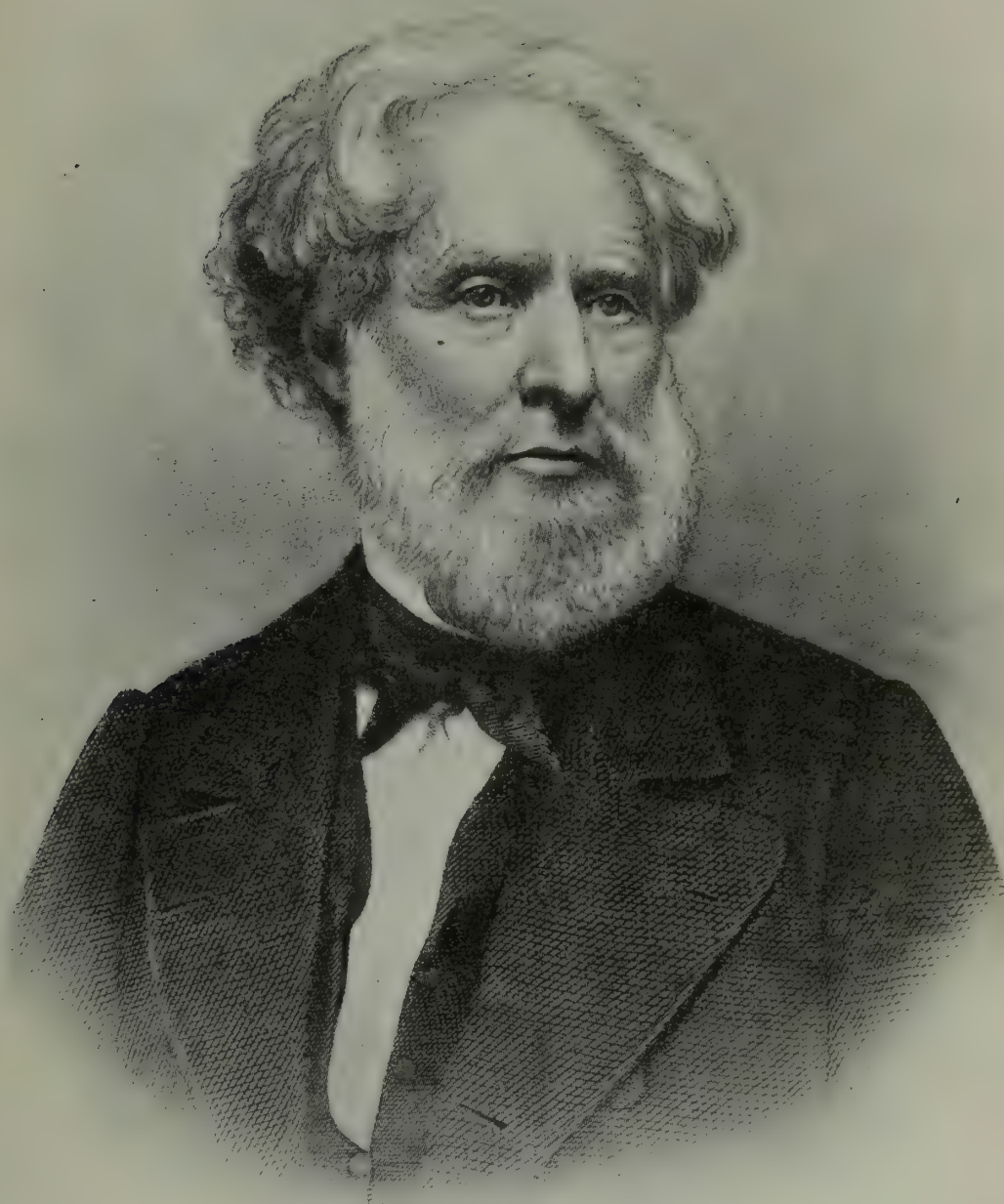
they told not how to perform the operations, but of the results to be obtained.

He called upon many distinguished in the profession, of whom he had read or heard. They received him politely and talked with him freely. Especially does he speak of Mr. Gray of Old Burlington street, a thoroughly educated surgeon, "one of the first mechanical dentists in the world." Mr. Gray urged the necessity of the dentist possessing mechanical skill before he could do justice to the profession or the patient.

After acquiring some valuable knowledge, he next went to Paris, where he also called on men of prominence in the profession, to be received again with marked attention, but they failed to give him any opportunity to watch their operations until he met J. C. F. Maury (a brother to F. Maury, the author of *Maury's Dental Surgery*), an acknowledged expert in dental porcelain work, and author of a little book upon porcelain, dated about 1820. Parmly speaks of him as "a great and good man and dentist to the King's household." Parmly made arrangements with the gentleman to complete his studies with him.

There is a little story that Parmly told regarding his experience with M. Maury, who took him directly into his work-room, the first time any dentist had so done, and immediately began to show him specimens of his work, bottles of prepared bodies and porcelains, explaining how they were prepared and the formulas. Parmly reminded him they had not yet agreed as to terms. Maury cut him short by saying, "My friend that which I am telling you makes me no poorer, and if it is of any advantage to you I shall be very glad," and went on with his explanations. Parmly finally got him down to business and a contract was made out and properly signed, calling for a certain amount of instruction for a certain cash consideration. Maury seemed to consider the business part a bore, and as soon as the contract was signed, folded the paper up and put it away. Parmly says he did not think he gave it any further thought. He not only gave him the instruction asked for, but was constantly aiding him with valuable suggestions, and after the time of contract had expired, he continued with him some time, being treated more as one of the family than as a student.

After the completion of this course of study, Parmly returned to London, where he became associated with his brother Levi Spear in the practice of dentistry with marked success. Here he had the



Yours Affectionately
G. D. Army

opportunity of seeing the operations of the best operators, among whom was Mr. George Waite, whose gold fillings reached Parmly's ideal as to perfection in dental fillings. He described Mr. Waite as "the Hudson of England."

In London he quickly attained prominence. Amongst his personal friends and clients who contributed to his success were Dr. Baillie, Sir Astley Cooper and Sir Anthony Carlisle, physician and surgeon to His Majesty George the Fourth, and Sir Benjamin West, president of the Royal Academy. After two years, impaired health caused by the climate and love of home and country, caused him to return to America, in 1823. He settled permanently in New York city, where he soon acquired an extensive and remunerative practice, and for more than thirty years stood at the head of his profession.

To Eleazar and Levi Parmly is ascribed the honor of having first taught in America "the corrosive action of acids," as the cause of dental caries. This theory was first published by Salmon of London, 1664.

Parmly was one of the first, if not the first, to advocate regular examination of the teeth of children at academies and boarding schools and the performance of such operations as they required at stated intervals. He was also first to advocate the use of soft wood and gum elastic to wedge teeth. Parmly strongly condemned the use of "*Royal mineral succedaneum, mineral paste, diamond cement, and every other vile composition in which there is a mixture of quicksilver*" and recommended "*gold as the only permanent stopping material*," saying he "had inserted only one amalgam filling," and adding emphatically, "*I would not touch the nasty stuff.*" Later in life he could not prove that it was injurious when the subject came to final discussion before the American Society of Dental Surgeons, of which he was one of the founders, and, in 1847, the president. He succeeded Dr. H. H. Hayden at his death, filling that office until 1853. In 1822 Parmly first advocated the necessity of making the surgical and mechanical branches of dentistry distinct. He believed each department should be practiced as a specialty and that it was impossible for one man to excel in all departments. In 1829 he gave up the prosthetic part of his practice, relinquishing the same to his brother Jahial, and devoted his energies to operative dentistry at which he greatly excelled.

He gave to the profession many ingenious instruments, among which is the Parmly improved forceps and turnkey for extracting

teeth. This instrument he made while with Maury in Paris. This key was much smaller than those in general use.

In 1839 a movement toward elevating the standard of the profession and its educational interest was inaugurated, in connection with which was commenced the publication of the *American Journal and Library of Dental Science* at Baltimore, the first dental journal published in the world's history.

Drs. E. Parmly, Elisha Baker and Solyman Brown were the publishing committee and chief promoters—Dr. Chapin A. Harris and Eleazar Parmly the first editors. This publication was part of the movement which brought about the founding of the first dental college by Harris and Hayden at about the same time.

Parmly had a high conception of professional requirements and offered to "receive students and render them fit for practice for \$1,000; \$700 in any other city in Great Britain or America, and \$500 for foreign practice." At this time, there being no colleges, this was a customary practice.

At the second Commencement Exercises of the Baltimore College of Dental Surgery, Feb. 18, 1842, the honorary degree of *Doctor of Dental Surgery* was conferred on Parmly. In 1851-2 he was *provost of this institution*.

His best literary work was an essay on "The Disorders and Treatment of the Teeth," published simultaneously in London and New York in 1822. He re-published Hunter's celebrated "Treatise on the Teeth," with notes, giving his opinion of this work and the methods it advocated. He also added "notes," 1833, to Dr. Solyman Brown's poem "Dentologia," "a most curious and singular production, extensively read and much admired." Dr. Brown was his friend for more than forty years.

In 1867, at the age of seventy-one, he published a volume, 600 pages, of his original poems, entitled "Thoughts in Rhyme," dedicated to his children. To read these poems is to appreciate the man for his true worth.

He was married July 17, 1827, to Miss Anna Maria Valk Smith, an adopted daughter of Mr. John M. Ehrick, a broker. To them were born eight children, Anna and Ehrick, twins (Anna was a talented artist and married T. P. Rossiter, the distinguished artist. Ehrick, the only son who reached maturity, practiced dentistry in New York until he retired, 1889). Mary Montague (named for the best friend of his early youth—Basil Montague, Queen's Counsel of

London, son of John, Fourth Earl of Sandwich, and First Lord of the Admiralty); Julia; Louise C.; and three sons who died in infancy.

In 1861, after the death of his wife, he retired from the active practice of his profession, and sought rest and comfort in traveling, making a number of tours of Europe, where he was welcomed in the best social circles by the most distinguished persons. He was received by Napoleon the Third and the Empress Eugenie and Pope Pius the IX; Robert and Elizabeth Browning; Dr. Birney of London; Barry Cornwall; John Mitchell, Queen's Librarian; Drs. Cartwright, Nayssmith, Rogers, John Tomes, Sr., Thos. Bell, T. W. Evans of Paris, and Henry Inman, the portrait painter.

He was fond of society and for years his home was the mecca of distinguished literary people and artists from all countries and of all creeds. He was an intimate friend of President Abraham Lincoln, who entertained him on various occasions at the White House; other close friends were Horace Greeley; Hiram Powers, sculptor; Healy, the artist; Buchanan Read, poet and artist; Dr. Valentine Mott, the celebrated surgeon, and Chas. Toppan, the engraver.

He was said to be one of the handsomest and most distinguished looking men in America, in his early manhood. He possessed the talent to a marked degree of making friends and patients out of the most desirable people, and seemingly everything he touched turned to gold. He excelled in combining a Chesterfield manner with business acumen. He inherited from his wife three lots on Broadway and Maiden Lane, New York City, which were recently sold to a building syndicate for one million dollars; he left at his death a fortune of three million dollars, acquired through habits of industry, frugality and the rise in real estate.

He took an active interest in prisons and prisoners. The first meeting of the Prison Association of New York was held in his house and many meetings thereafter. He also took a lively interest in temperance work and made occasional addresses. He was a total abstainer from all liquors and once remarked to the Sunday school of the First Compellite Baptist Church of New York, which he helped build and was greatly interested in, that "the strongest thing that ever passed his lips was a cup of coffee."

He was six feet in height and very athletic and a superior and

fearless horseman. He was dignified in manner, very domestic and overflowed with demonstrations of affection to those he loved.

It is not a known fact that Dr. Parmly was an actor in the first tragedy of an American heiress being sacrificed at the shrine of European nobility. He was engaged to marry Miss Mary Astor, the only daughter of the head of the original John Jacob Astor family. This stern parent had set his heart on his daughter marrying a nobleman. This being known, the engagement of his daughter and Dr. Parmly was kept secret as possible, only being known to Miss Astor's mother and Parmly's bosom friend, Dr. Solyman Brown, who related these heretofore unpublished facts before his death.

Pere Astor suspected the attachment and suddenly ordered his daughter to prepare for a trip with him to his chateau in Switzerland. Suspecting her father's haste, she parted with her betrothed, agreeing to write him to come to Paris at once, if her father was bent on forcing her to wed a nobleman, saying she would marry Dr. Parmly even if her father disinherited her. The father formed a marriage agreement with Baron von Romph and notified his daughter the day the wedding would take place. Dr. Parmly was notified at once, but arrived in Paris a few days too late, but in time to hold a farewell, tearful interview with the baroness before her departure for Germany, where she died a few months after with a broken heart.

The name of Parmly frequently appears in the records of dental history—Jahial, of New York; Ludolph, of Mobile, and David R., of St. Louis and New York, were first cousins of Dr. Eleazar Parmly. Henry C., of Rome, Italy; Samuel P., of Paris, France; George W., who practiced in New Orleans, The Hague, Paris and London, were his nephews.

Eleazar Parmly died of pneumonia, at New York, Sunday, December 13th, 1874—mourned by all who knew him—at the age of 77 years, and was buried in Ransom Cemetery, Shrewsbury Township, Monmouth County, New Jersey. His brilliant mind and careful judgment added much of merit to the profession. Reared in an obscure village in the Green Mountains, in the old puritanical style, by humble parents, he entered the business walks of life empty-handed, with neither money nor influential friends, but with heart attuned to the beauties of nature and mind determined to excel at whatever he attempted; from poverty and humble origin he worked his way to, not only the highest professional standing, but to the

highest social circles, to be welcomed by the most intellectual men and women of Europe and America.

He was a Christian man of fine sensibilities, possessing a refined and cultured manner and generously endowed as a poet and lover of letters—a literary man of marked ability with high ideals in dentistry. It is said his distinguishing characteristic was a *scrupulous attention to little things*, which, joined with integrity and a cultivated taste, laid the foundation both to his fortune and his popularity as a dentist. His eminent usefulness to his profession cannot well be overestimated; he was a seeker after knowledge and a teacher of high attainments. Spurred by ambition, he toiled unceasingly and traveled many miles in the pursuit of knowledge, that he might equal the foremost of his profession. He took as his motto the words of Ambrose Pare: "He that would perform any great and noble work must apply himself diligently to the knowledge of the subject."

The facts contained in this sketch have been obtained from:

Dr. Ehrick Parmly, Oceanic, N. J., son of the subject of this sketch.

Dr. E. Parmly Brown, New York, and Dr. Eleazar Parmly's "Thoughts in Rhyme," printed by Thos. Holman, New York, 1867.

America's successful men, edited by Henry Hall, 1895.

American Journal of Dental Science—Vol. 3, Sept., 1842, page 1.

Dental Cosmos—Vol. 17, Jan., 1875, page 21.

Dental Register—April, 1855, page 222.

American Journal of Dental Science—2nd Series, Vol. 2, page 8.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

TO THE EDITOR:

The dental ball for the season of 1902, '03 was opened Monday, September 29, by that "old reliable" the Central Dental Association of Northern New Jersey, with a good meeting.

New Brunswick, N. J., is thirty-two miles from New York on the Pennsylvania R. R. and about sixty miles from Philadelphia.

At New Brunswick are the extensive laboratories and factories of Johnson & Johnson whose name is to-day familiar in all well appointed dental offices, the world over.

The "C. D. A." and their friends were invited to make a tour of their laboratories on the afternoon of September 29, accept a banquet at their hands in the evening, and then listen

to "A Talk on Germs" by F. B. Kilmer, Ph. C., who has been in charge of their laboratories for years. Dr. A. Irwin, of Camden, N. J., was also to read a short paper entitled "Asepsis as Applied to Dentistry."

More than one hundred visitors inspected the factories, and one hundred and twenty-six (including representatives of Johnson & Johnson staff) sat down to the banquet.

One would have to take a much longer time than the three hours we spent to be able to do justice to what was seen. The scrupulous cleanliness and healthfulness of the vast number of buildings was frequently commented upon, as also the fact that the operatives were not crowded, but had plenty of room, good ventilation and good care. Of course to those familiar with the production of this house, all the foregoing was to be expected, but "seeing is believing" and we saw.

Cotton in its raw state was seen taken into the separating and sterilizing machine, and distributed by air pressure through cylinders wherever needed. All the steps of converting it into cotton rolls, cottonoid, etc., etc., were shown. Looms have been put in and the company now manufactures from beginning to end, the gauze, the material of which our aseptic napkins are made.

They have incorporated a printing establishment and a paper box factory and make all their own goods of this kind on the premises. They print all their own labels and get up all their handsome pamphlets. The *menu* of the evening was printed on a piece of cottonoid, enclosed in stiff board, and was a work of art.

A visit was also made to that portion of the laboratory where the formaldehyde sterilizers were in operation, and where experiments were being made regarding germ life, etc.

Beginning on a *small* scale some seventeen years ago and making such a specialty of court plaster and porous plaster, that the people of the town soon called it the "plaster factory," they have gone on and on adding one thing and another as experience on their part, and suggestions from eminent surgeons and dentists have made it advisable.

To stand as we did and observe long rolls of gauze saturated with aseptic material then dried and packed in glass jars, which jars were placed in a vacuum in a sterilizer into which formaldehyde gas was forced, penetrating every fiber of the material, and then by withdrawing air again, the jar sealed automatically, showed to

a nicety the absolute care exercised in sending out perfectly sterilized goods. We walked about three miles on our round through the laboratories.

After the banquet Prof. Kilmer gave his "Talk on Germs." Although the first part of his discourse was elementary it was so couched that it was interesting. He took as text the motto on the face of the menu card, which read, "Men and women are doomed to constantly combat dirt, disease and the devil." The doctor told us that he had had much experience in the germ business, but that the subject was practically unknown fifteen years ago. The laboratory we saw to-day was an exemplification of the growth of the germ theory. In his explanation of the germ, he likened the outer shell to woody fiber, which is the protecting sheath of the protoplasm or cell contents. It is owing to the varying resisting powers of these sheaths which makes it quite difficult in some cases to destroy germ life. The doctor, continuing, said that he had heard many formulæ prescribed for the destruction of *all* germs, but there was just one thing that would do it best, and that was a strong solution of common sense. Pure carbolic acid, high strength mercury, bichloride, etc., etc., are quite inadequate. Good clean water with good soap and a scrubbing brush will bring about wonders.

Dr. Stockton took the floor following Dr. Kilmer. He said that he had made the inquiry some years before as to the meaning of the initials J. & J., and was told it signified just Johnson. Since then he had found out conclusively that the meaning was always *just Johnson*. A rising vote of thanks was accorded the hosts of the day and it was responded to with vim.

Dr. Kilmer interspersed his talk with stereopticon pictures projected on a screen.

Dr. A. Irwin's talk which followed was "Asepsis as Applied to Dentistry." He described the aseptic measures necessary in the dental office of to-day, and the advantages of the more general use of the dental doily (a la Dr. Flagg) for keeping the mouth perfectly dry for an indefinite period.

After further thanks to the J. & J. people for the courtesy shown the C. D. A. of N. N. J. adjournment took place. Very few arrived at their destination before two o'clock that night (or morning).

Yours faithfully,

"THE BOROUGHs."

TO THE EDITOR:

My attention has been called to the following statement, which was made at a recent State Dental Meeting. The speaker is quoted as saying: "You all know Dr. Wedelstaedt. For several months past he has been making an examination of the various porcelain bodies, and he has made a long series of tests regarding their strength. I have just received a letter from him in which he says that the results of his experiments confirm my views, the Jenkins' body makes the strongest porcelain inlays of all the porcelain bodies on the American market."

The person who made this statement is a great joker, and he said the nice things about me and the experiments I have been making out of pure love of fun. But unfortunately, I have never written him a letter on any subject, so therefore, I could not have given him the information which he said he obtained. I cannot, for the sake of "pure fun," allow a statement of this kind to pass unnoticed. It is very true, I have made many tests to obtain some data regarding the strength of the different porcelain bodies men were using for making inlays and crowns. These data are awaiting my attention, but I have not had my vacation, and have too little time just now to arrange and place the results before the profession so that they can make their own deductions. Until I have this time, permit me to say that seven different kinds of porcelain inlay material have been tested, and I have been unable to find any which were as strong as glass.

Yours truly,

E. K. WEDELSTAEDT.

New York Life Bldg.,
St. Paul, Minn., Sept. 9, 1902.

TO THE EDITOR OF THE DENTAL REVIEW:

Nothing is so fatal to the value of criticism as the introduction of the personal note. That the critic's verdict must not be influenced by his relations with the author is axiomatic among fair and just men; that his own personal tastes and opinions should not be his standard of measurement is not so widely accepted, however; and that all criticism should be based on laws outside of both critic and creator is a still higher plane in the ethics of criticism to which few have yet attained.

Criticism, like justice (for what is criticism but just judgment?) must stand blindfolded, and must hold the adjustable balance without love and with no hate.

The goddess, if we may so call her, must surely have slipped her bandage and have peeped under with unkindly eye when a recent review, by Dr. Brady, of Iowa, was penned for the columns of this journal. The article in question is a most acrimonious attack on Dr. MacDowell's book, "Orthodontia," which seems to have thrown the Iowa gentleman into a violent case of hysteria, causing him to pen a criticism which, for personal invective and utter disregard of the courtesies which govern debate or argument among gentlemen, is in a class by itself, and surely below the level of scientific controversy.

In the article Dr. Brady pays his respects to me in no gentle manner, because in the January number of this journal I made a favorable review of Dr. MacDowell's book. This present communication of mine, is not to be taken as an answer to Dr. Brady's attack. An answer would necessarily be made on the plane of his remarks, and I can see no good to accrue to the profession by such exchange of personalities. He who runs may read between the acrid lines a personal malignity which has its spring—the worthy gentleman best knows where—and which by its very nature must defeat the purpose of its aim.

I simply want to correct some misstatements made by the writer, which might mislead such of your readers as have read his article and have not yet read the book, though in a reading of the book would be found the strongest refutation of his unwarranted attack.

I use the word unwarranted, advisedly, for surely nothing can be more unwarranted than the manner in which Dr. MacDowell's purposes and aims are misrepresented or the way in which the words of my review are misquoted or omitted. I wish here to reiterate most strongly all that I have said about Dr. MacDowell's book, and to call attention to the fact that he has given credit where credit is due for everything used therein, and that he has not appropriated without credit the works of others as his Iowa critic alleges. I have but to call the attention of readers to part II, chapter IX where in a chapter on appliances, credit is given to Drs. Farrar, Coffin, Patrick, Bryne, Jackson, Angle, Case, Knapp, Lukens and Talbot.

One of the most absurd charges in the Iowa review is that of a lack of originality in Dr. MacDowell's work. Yet, even if this were true, surely the man who places the ideas and methods of

others in such a form that they are most accessible to the student, performs an important work for his profession which deserves high praise. Such a book on the subject of orthodontia has never before been compiled. Therefore, I had good reason for my remark to which Dr. Brady takes such violent exception, that "his book is one of the most complete TEXT-BOOKS that has yet been written on the subject of orthodontia."

Dr. Brady kindly says of me that I either undertook a task for which I was unqualified or wrote my review to please a friend.

The first charge calls for no notice. I have been writing long enough for this and other dental reviews to make it but fair to conclude that the editors of said journals have sufficient reason to ask for my work. As to writing to please a friend, however, I would like to say that though any man who has kept in touch with dental literature for the last ten years would absolve me from a charge of partiality, I would yet deem it far better to please a friend by penning a friendly review, at the expense of no man's reputation, than to please a friend by making an unfriendly attack on a writer who has perhaps entered that "friend's" special field of labor—a charge to which, perhaps, the gentleman of Iowa cannot plead entire guiltlessness.

C. E. BENTLEY, D. D. S.

TO THE EDITOR OF THE DENTAL REVIEW:

In the July number of *THE DENTAL REVIEW* appears a criticism of Dr. Bentley's review of my work on Orthodontia.

A careful reading of this article reveals the fact that it is a personal attack instead of a criticism, and the statements that the author has copied, imitated and used the material of others without due credit are unjustly made.

The author has given credit where it belongs, and plainly states in the preface and several other places that all methods that he considers of practical value are taken and used. The object of one part of the work was to group together all of the sets of appliances showing the modified ideas of each appliance and its construction; also, to show the evolutionary stages of most of the important appliances; summing them all up eventually in the treatment, with advice on their use gleaned from practical experience.

There are ten or twelve chapters in this work which deal exclusively with certain phases of orthodontia that cannot be found in any other work, yet the article says that there is not an original thought to be found in it. In chapter 22, where the start in the treatment of cases is made on page 170 of the work, the author makes the following statement: "In making a recapitulation of all the appliances and methods of treatment as found in chapters 9 and 20, it can readily be seen that all of the sets of appliances and methods of treatment of cases are focussed toward one general method with a little individuality of detail, and so in the treatment of the cases in this work the author does not limit the treatment to one method, but has constructed, modified and combined all methods freely with his own ideas to obtain the best practical results."

That statement itself is sufficient. It would be impossible to credit every step in the use of an appliance, its history, who used it first, who modified it, who improved it, etc. Others do not do it; the author does not care to do it.

The criticism states "that the so-called changes from Dr. Angle's original classification do not disguise the source in the least." No attempt is made to disguise the source as the following quotation from page 55 clearly shows :

"In using Dr. Angle's classification when lecturing to students the author found that the characteristics of the subdivision of second class and third class and the treatments of the second class and divisions and subdivisions and the third class and subdivisions was not clear and did not coincide with some of the characteristics which complicates the classification making it misleading and confusing. This necessitated a change and the author has, with all due respect to Dr. Angle, modified this classification to a more satisfactory and comprehensive outline."

The criticism of the chapter on comparative dental anatomy is a strained effort to say something without producing any argument. He says, "Indeed it is doubtful whether comparative dental anatomy should form any part of a work on orthodontia." It is a recognized fact that comparative dental anatomy is necessary in the study of general dentistry; and so important is this subject in its relation to the teeth, their size, use, etc., that it becomes absolutely necessary that a special phase of the subject in connection with orthodontia be taken up and studied. As stated

on page 8 of the work, "comparative dental anatomy studies the development, form, size, position, number, attachment and detail function of the teeth * * * to better understand the occlusion and the functional activity of the teeth of man * * * it is necessary to familiarize one's self with the teeth and their particular function with which nature has endowed the different classes of animal life." The phase of comparative dental anatomy in this work is entirely new in its application and is handled entirely from the standpoint of orthodontia. Almost two years' time was consumed in the Field Columbian Museum, Smithsonian Institute and the Museum of the Northwestern University Dental College, in securing the material, measurements, photographs, etc., and yet the writer says it is all copied.

Dr. Brady has attacked subject after subject on the surface only. For instance in the chapter on the X ray and its use in orthodontia upon which the author has spent more time and money than on any other six chapters together, and has waited months and years to get proper material, the text is passed without a word, and the attack is made directly upon the cuts, which are photographs of X rays, and are made with the exception of one from retouched photographs, and not from the retouched X rays. It takes from one to three hours to produce a clear photograph from the celluloid negative of an X ray. A photograph of an X ray taken from the celluloid negative is far clearer than the original, and yet on account of the clearness of the cuts they are pronounced as misleading as retouched X rays.

As a rule all photographs on any subject are usually retouched to bring out sharpness and detail. A photograph always represents the true or natural condition of a model. An engraving of a model may be made into anything but the true article. There are no engravings of the author's in this work. As to pen drawings perhaps a student would in some cases be confused, if no other thought accompanied the cut. However, in this work there is given, not only a photograph of models before and after the work, showing the movement accomplished, a description of the method of treatment, appliances used, how to put on, etc., but it also shows the case in pen drawing with appliances on, to more clearly establish the procedure in the mind of the student.

Under no circumstances has the author made any attempt to use the cuts of others without giving some reference to them,

either in the contents or on the margin, and no cuts have been used without permission. There are mistakes in spelling and in words and phrases as may be expected of any first edition, perhaps due, to some extent in this case, to the absence of the author from the city when the last proof was read and sent to press, but rare indeed is the first edition of a work that is free from mistakes, and it may meet the third or fourth revision before all are completely eliminated.

This text-book on orthodontia was written for a universal reference text-book so that both teacher and student could refer to it for any phase of the subject, and could follow the outline of treatment laid down, using any method or appliance desired. All the cuts in this work were used in lantern slide form illustrating the course of lectures delivered to the senior class one year before Angle's new work appeared. J. N. MACDOWELL.

MOONLIGHT AT OCEAN PARK.

A diamond pathway pointing to the rim
Of yon horizon shadowy and dim;
Black threatening walls approaching to the shore,
That fall and break with undulating roar.
Sparkle of all the dancing sprites set free;
Light of an unseen ship, far off at sea.

On shore the shining of electric stars,
Red lamps apeer thro' cottage window bars,
Sand slopes agleam like Northern fields of snow,
With twinkling lights afar that come and go.
Then like some comet, dropping from the sky,
A searchlight falls upon the hill near by.

Some bird of night sends forth a plaintive call,
And now the air of peace broods over all.

GARRETT NEWKIRK, *in Los Angeles Express.*

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The DENTAL REVIEW, 55 State St., Chicago, Ill.]

Amalgam Carrier.—A convenient amalgam carrier can be made by attaching a piece of coin silver to the end of a German silver wire of suitable size and length, and mounting same in an old mirror handle.

F. A. WELD, Belvidere, Ill.

Finishing Rubber Plates.—A very glossy surface can be given vulcanite work by using a dry and moderately stiff brush-wheel charged with talcum powder after having finished with pumice or emery.

F. A. WELD, Belvidere, Ill.

Adjusting a Broach in the Right Angle.—Cut the required length off the barbed end of an ordinary nerve broach. Roughen the shank end and ligate with dental floss to an ordinary right angle wheel bur. This is found more convenient than soldering and the heat would destroy the temper of the broach.

G. H. MADILL, Chicago.

Wire for Splints.—No. 30 iron wire (tinned) is a very satisfactory adjunct in wiring splints to teeth, or in wiring teeth together in fractures of the maxillæ. I have found the oxidation after six weeks' continuous service in the mouth to be very slight. I have also used it with splendid effect in regulating. It is strong, small and does not stretch, and its value will become apparent upon use.

B. F. ESHELMAN, Tacoma, Wash.

Sensitive Buccal and Labial Cavities.—For sensitive buccal and labial cavities Dr. F. J. Patterson suggests flooding them with

the liquid which comes with Justi's cement. This is good and has been used with marked success, but the use of hot carbolic acid in this class of cavities has been found to produce good results, as the most sensitive ones can be burred out with practically no pain to the patient.

J. E. HANCOCK, Chicago.

Method of Removing a Shell Crown.—When it becomes necessary to remove a molar or bicuspid crown to treat a root, or to make an attachment for a bridge, it can be easily accomplished without pain to the patient by drilling a hole through the lingual surface near the junction between the cusp and band and inserting an instrument (the handle of a worn-out excavator), using it as a lever. The hole in the crown is easily repaired, and by adopting this method the form of the crown is not changed.

J. W. JOHNSON, Chicago.

A Roughened Base on Porcelain Inlays.—Place an extremely thin layer of very coarse high fusing body over the floor and nearly to the margins of the matrix. This spread must be of much higher fusing porcelain than contained in the body of the inlay. Bake to a SLIGHT bisque. If the other porcelains are handled correctly the result will be a nicely granulated surface on the base, which is especially applicable to small and shallow cervical restorations, where the staying qualities are difficult to obtain.

J. S. BRIDGES, Chicago.

Transferring Teeth from An Old Plate to a New One.—A quick and easy way of transferring where the articulation and length of teeth is satisfactory is as follows: After having secured a model, place the old plate over same and wax carefully at the edges. Invest model rather high so that teeth and plate will be in upper part of flask. Oil thoroughly before running. Boil for fifteen or twenty minutes to soften rubber and then separate. Remove teeth from old plate and replace in their proper positions in flask. Pack and finish as in ordinary cases.

F. A. WELD, Belvidere, Ill.

Anterior Attachment for Bridge Work.—Where it is necessary to use an anterior tooth as an abutment for a bridge, if the tooth is sound the attachment can be made without sacrificing the labial portion. The pulp is removed and the root filled through an opening made on the lingual surface. The lingual plate of enamel is now ground so that it presents a concave surface the depth of the concavity depending upon the proximity of the lower teeth when the jaws are closed. Burnish a thin piece of metal (platinum or pure gold 36 g.) into the concavity, allowing the edges to extend far enough from the opening to insure a strong shoulder. Insert the pin into the canal through the metal, and after removing from the tooth, attach with solder, being careful to retain the correct relationship. The solder should be carried to the edge of the metal to strengthen it. This makes a strong attachment for a bridge as we can insert a longer pin in the root than with the ordinary crown, and by adopting this method we preserve the labial portion of the natural tooth.

Towel Bibs.—More than twenty years ago it occurred to me that a towel bib would be a good thing. I had some made and have never been without a dozen or more since. They are easily made by any needle woman or needle man (I would make them myself rather than be without them), and are sent to the laundry same as towels.

Take an ordinary towel, one of pretty good length and fold it on a line about one-third from the upper end. Cut a semi-circular notch from the double thickness at the folded edge, sufficient to half encircle a No. 16 collar. Bind this with wide white tape, leaving enough extending on each side for strings. Then you have a bib that is always ready—double thickness over the breast and shoulders, the single thickness protecting the dress below, and it is neat and clean.

I ask each reader to have at least one made, right off. Try it, and if you ever use another towel with a pin, or a black apron, or a rubber drool-bag, why, I'll have my opinion of you.

GARRETT NEWKIRK, Los Angeles, Cal.

Administering Anesthetics.—Chloroform and ether act as a sedative, depressing the heart's action. Death is caused by strangulation of the heart. Nitrous oxide gas acts as a stimulant increasing the heart's action. Death is caused by strangulation of the lungs. In administering chloroform or ether pay attention to the heart's action, but in the administration of nitrous oxide, close attention must be given to the respiration, as that is of the greatest importance. I would administer gas to a patient troubled with heart disease and perform an operation without pain or shock, rather than do so without an anesthetic, but there is danger in administering chloroform or ether to patients having heart disease. Chloroform or ether should not be administered to patients while sitting in a dental chair or an upright position, but in administering gas it makes no difference whether the patient is sitting upright or lying down, although if the patient is sitting, the head should be in a natural position and not thrown back. In administering any anesthetic it would be far safer for the patient to be in the hands of an experienced operator than one lacking experience.

L. W. NEVIUS, Chicago.

Impressions of Loose Lower Incisors.—Take enough plaster of Paris to cover the lingual surfaces of the six or eight anterior teeth, to a thickness of about three-quarters of an inch, on the ends of the first and second fingers of the right hand. Place it in position in the mouth and allow it to set thoroughly, making no effort to cover the labial surfaces of the teeth. If the teeth are moved out of place they can be readily seen and put back in their normal position before the plaster becomes hard. Remove this impression by pushing it backward and trim if necessary. Coat the surface with a separating material and place it back in position in the mouth. Cover the labial surfaces of the teeth with soft plaster, being careful to bring it well over the end of the plaster already in place. When thoroughly set, this part of the impression can be removed labially, and when both pieces are removed from the mouth and placed together the result is a perfect impression without danger of injury to the loose teeth. This is also a good way to take an impression where the lower incisors tip in at the incisal edge.

C. E. WOODBURY, Council Bluffs, Iowa.

MEMORANDA.

The Southern Illinois Dental Society is holding its annual session at Alton, October 14 and 15. There is promise of a good program and a good time.

GEO. A. McMILLEN, Alton,
Chairman Ex. Com.

CHAS. B. ROHLAND, Alton,
Secretary.

DEATH OF DR. CHARLES MERRITT.

Through the kindness of Dr. G. Alden Mills we learn of the recent death of Dr. Charles Merritt, one of the veteran practitioners of New York City. He was eighty-nine years of age and was active almost to the last. His genial personality won him a host of friends, by whom he will be greatly missed.

DR. MITCHELL'S DINNER.

Dr. Wm. Mitchell gave a dinner to a few of his professional friends in London, Tuesday, September 2, at the Trocadero. Those present were Drs. W. Mitchell, A. E. Farmer, B. Holley Smith, T. W. Brophy, A. W. Harlan, W. C. Barrett, L. J. Mitchell, C. Rathbun, Gordon White, W. W. Walker and H. J. Goslee.

A CORRECTION.

In the letter of our New York correspondent for July, Dr. R. H. Hofheinz is quoted as saying that the oxyphosphate of zinc is a most dangerous filling material on account of its affinity for moisture, etc. Dr. Hofheinz writes us that the correspondent misunderstood oxyphosphate for oxychloride of zinc, and we accordingly take pleasure in making the correction.

DENTAL BOARD OF NEW SOUTH WALES.

We are indebted to Dr. Henry Peach, of Sydney, for a very excellent photograph of the Dental Board of New South Wales, the first one appointed there. If the character of the new board is on a par with the appearance of its members, the administration of dental affairs in New South Wales is assuredly in competent hands. Dr. Peach has our sincere thanks for the courtesy.

THE MINNESOTA STATE DENTAL ASSOCIATION.

The nineteenth annual meeting of the Minnesota State Dental Association was held in St. Paul, Minn., September 1, 2, 3, at which time the following officers were elected for the ensuing year:

S. R. Holden, Duluth, president; A. M. Lewis, Austin, vice-president; H. M. Reid, Minneapolis, treasurer; Geo. S. Todd, Lake City, secretary. The next meeting will be held at Minneapolis. GEO. S. TODD, *Secretary.*

DINNER TO DR. AGUILAR.

Dr. F. Aguilar, of Madrid, Spain, has been making a tour of America inspecting schools in the interests of his government, and while in Chicago in September he was tendered a dinner by the Odontological Society and a few

invited guests at the Athletic Club. Dr. Aguilar is one of the leading practitioners of Spain, and has the distinguished honor of being the royal dentist. He is intensely interested in the advancement of internationalism in dentistry, and with such men as he interested in this movement abroad the prospects are bright for a liberal interchange of ideas among the different nations of the world, to the end that dentistry shall advance as it never has before.

RECENT PATENTS OF INTEREST TO DENTISTS.

706,710. Receptacle for tooth powder or other material, Joseph C. Allen, Plainfield, N. J.

707,810. Dental form for holding teeth, Raymond J. Wenker, Milwaukee Wis.

708,811. Machine for forcibly casting dental bridges, Merrill W. Hollingsworth, Philadelphia, Pa.

708,772. Dental gold annealer, Chapin F. Lauderdale, Milwaukee, Wis.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Bldg., Washington, D. C.

DR. L. P. HASKELL'S BEREAVEMENT.

The many friends of Dr. L. P. Haskell will be pained to learn of the death of his estimable wife on September 22, 1902. Dr. and Mrs. Haskell had lived a long and happy married life, having celebrated a few years ago their fiftieth wedding anniversary, at which time they both gave promise of many years of happiness yet to come. Their home on that occasion was crowded with friends and relatives all joining in a cordial Godspeed for the future, and it was one of those homes where conjugal felicity reigns supreme and which more than anything else gives stability to the commonwealth. The DENTAL REVIEW tenders its sincere condolence to Dr. Haskell in this his hour of sadness and bereavement.

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ORIGINAL COMMUNICATIONS.

PRESIDENTIAL ADDRESS ON THE PHYSIOLOGICAL POSSIBILITIES AND LIMITATIONS IN EDU- CATION.*

BY WALDO E. ROYCE, D. D. S., (PHILA. DENTAL COLL.), TUNBRIDGE
WELLS, ENGLAND.

Gentlemen: It seems probable that the subject of education will occupy a large portion of the time of this meeting; it is, therefore, important that we have a clearly defined idea of the meaning of the word education. In common usage the words instruction, knowledge, education and skill are often used as if they were interchangeable, or synonymous in meaning. For our own convenience in this discussion we should recognize the fact that these words are not synonymous, but, in the order named, they stand more in the relation of a sequence, the one leading up to the other. Thus, instruction consists in training the organs of special sense, the afferent nerves and certain portions of the brain to receive and to retain facts. Facts thus stored constitute knowledge. While knowledge is an important component in this sequence, it should not be looked upon as an end, but merely as a means to an end. In itself it has no practical value, and the man who seeks knowledge solely for knowledge's sake is selfish and useless; he is no more deserving of respect than the miser who hoards money for money's sake. Education especially deals with the efferent nerves and the organs of expression, for to educate is to draw out the mind. A mind must be formed before it can be drawn out; knowledge is, therefore, a prerequisite to education. As the result of instruction is knowledge, so the result of education is skill. Skill, then, does

*Delivered before the American Dental Society of Europe, Aug. 13, 1902.

not alone pertain to handicraft, but is that essential without which all knowledge is valueless. The professor of Greek, no less than the mechanic, depends upon his skill to give value to his knowledge.

Of all living creatures man alone possesses a creative mind, capable of almost infinite culture, and just in proportion as the mind is educated, in a normal way, will the gulf which separates man from the highest of the brute creation be widened. Moreover, since the law of "the survival of the fittest" does not apply alone to species, but as well to individuals of the same species, just in proportion as his mind is educated will the individual man rise above his fellow men.

The brain is said to be the organ of the mind, but associated with the brain are the sensory and motor nerves, the organs of special sense and the organs of expression. Upon this association depends the existence of the mind. That being the case, a knowledge of the physiology of these organs, both human and comparative, is of primary importance to every educator; and, though the magnitude of that subject places it far beyond the limits of a paper, it is hoped that a review of some of its most prominent points may lead to a thorough study of the subject and to a recognition of the physiological possibilities and limitations in education.

In a study of this association of organs the brain, being most important, should be first considered.

As from an open book the history of the evolution of the brain may be read from the ancient skulls which have been discovered, their size and shape telling of its gradual advance in weight, while the furrows upon the inner surface speak of the increasing complexity of its convolutions.

The cranial capacity of the largest anthropoid ape which has been examined was 600 cubic centimeters; that of the oldest and smallest human skull, which was found in Java, is computed at 850 c. c., while that of the average European is 1,575 c. c.

Macnamara¹ quotes Virchow as saying: "The largest ape keeps its baby-brain," and adds, "The ape's brain has reached perfection before the period of shedding its teeth, while in man it then takes its real first step to perfection."

Authorities agree in ascribing this baby-brain of the ape to the fact that the sutures of the skull have become consolidated

¹The Hunterian Oration, 1901, p. 7.

at the end of the first year of its life. It has also been observed that the sutures are closed at an earlier period in the lower than in the higher races of man, but it is a significant fact, and one which should be remembered when we consider the development of the nerve courses, that in all races the sutures are usually closed before adult life is reached.

Prior to 1870 it had been recognized that the cerebral cortex was the seat of the intellectual faculties, and that man depended upon the development of the third frontal convolution of the left side of the brain for his power of articulate speech, but all real knowledge of the functions of the various areas of the cerebral cortex has been acquired subsequently to that comparatively recent date.

Investigation has demonstrated that the cortex is divided into distinct physiological areas which have been designated, according to their respective functions, as sensory, motor and association areas.

These various areas of the cortex are associated with each other, with other portions of the brain and with the lower centers by nerve fibers.

As is indicated by the name, it is the function of the sensory areas to receive and respond to the sensations derived from the organs of special sense.

The motor area, also called the Rolandic area, has furnished a most interesting field for experimentation. These experiments have chiefly consisted of artificially exciting various portions of this area and observing the muscular action produced, or of removing portions of the cortex and noting the resulting muscular paralysis. So thoroughly is this region now known that the physiologist is able to cause muscular action in any portion of the body by applying the electrode to the corresponding motor area in the opposite hemisphere of the brain. The contraction of a single muscle may be obtained, or that of a number of muscles simultaneously or in succession, producing such motions as are by habit or education peculiar to the individual.

Much more difficult and less satisfactory have been the experiments upon those portions of the cortex which do not respond to electric stimulation, and which have been called association areas. Their functions are supposed to be to associate together the impressions received from the sensory and motor areas. They are also supposed to be the seat of memory. While this is largely con-

jecture, it has been demonstrated that the removal of a small portion of the cortex from one of these areas does not produce paralysis, but that the intellect of the patient is weakened in proportion to the amount destroyed. Again these areas find their greatest development in man, being not only smaller but relatively smaller in the monkey, and decreasing as we descend the scale of intelligence.

But not in brain power alone is man superior to other animals. His superior brain would be of little use, in fact, it never could have been evolved, had there not also been simultaneously evolved organs by means of which the results of its creations could be expressed. It would be difficult to enumerate the various means of expression. A shake of the head or a shrug of the shoulders may have its meaning, but the chief organs of expression are those of articulate speech and the hand.

In speaking of the value of speech Professor Huxley² has said, "Our reverence for the nobility of manhood will not be lessened by the knowledge that man is, in substance and in structure, one with the brutes; for he alone possesses the marvelous endowment of intelligible and rational speech whereby, in the secular period of his existence, he has slowly accumulated and organized the experience which is almost wholly lost with the cessation of every individual life in other animals; so that, now, he stands raised upon it as on a mountain top, far above the level of his humble fellows and transfigured from his grosser nature by reflecting, here and there, a ray from the infinite source of truth." Of the hand he³ said, "In consequence of the mobility of the thumb, it is what is termed 'opposable'; in other words, its extremity can, with the greatest ease, be brought into contact with the extremities of any of the fingers; a property upon which the possibility of carrying into effect the conceptions of the mind so largely depends."

Comparing the motor areas of man with those of the ape, one is led to expect that which is actually found: While the hand of the ape has great power of grasp, with its clumsy fingers and stunted thumb, it wholly lacks the capacity for accuracy and for delicate manipulation found in the hand of man.

As the brain depends upon the hand and the vocal organs to express its conceptions, and conversely, as no intelligent motion is

²Man's Place in Nature, p. 155.

³Man's Place in Nature, p. 118.

ever made or intelligent word is ever uttered without being prompted by an impulse from the brain, it is of importance that the means of transmitting such impulse be examined.

In 1891 Waldeyer advanced the theory of the neurone. This theory, briefly stated, is that the nervous system is made up of innumerable independent units. Each unit consists of a nerve cell and all its processes. This unit is the neurone, and he holds that these units, or neurones, are in contiguity but not in continuity; that there is interlacing of the processes, but no actual nerve connection.

While it is maintained by some that this theory of independent units requires further demonstration, the fact has been established that every nerve path is formed of a chain of nerve cells. This is effected by the body of one cell being embraced by the arborization of another cell, or by the interlacing of the tendrils of two or more cells. The term synapse has been given by Foster to this union of the neurones.

Both those who uphold and those who oppose the theory of the neurone agree⁴ "that in embryonic tissues, and even in early life, the neurones are entirely independent of one another."

Experiments have also proved that, in early youth, use hastens the development of the synapse.

Accepting, as most modern physiologists have done, the theory of the neurone, and that the connection at the synapse is at all times simply a matter of degree, the physiological law, that use develops and that want of use causes atrophy, has only to be applied and the question of so-called muscular education is largely explained.

It is supposed that the lost time which has been observed in the passage of a nervous impulse is due to a block at each synapse. The synapses also act like valves, absolutely preventing impulses passing in the reverse direction.

Reaction time is the name given to the time lost in this block at the synapses and it is defined by Schäfer⁵ as "The time of response by a voluntary movement to a stimulus applied to one of the sense organs." He⁶ adds that this time "varies with different individuals and in the same individual according to his physiological

⁴The Croonian Lectures, 1900, p. 5. (Mott.)

⁵Text Book of Physiology, vol. 2, p. 610 (Prof. Schäfer).

⁶Text Book of Physiology, vol. 2, p. 614 (Prof. Schäfer).

condition at the time. . . . In old age the reaction time becomes slow. Practice and attention tend, up to a certain point, to diminish the time." It is the difference in reaction time in different individuals which has chiefly given rise, among astronomers, to the term "personal equation."

Refractory period of nerve cells is thus described by Schäfer⁷: "When two successive stimulations are applied to the same sensory nerve cell, nerve fiber or nerve termination, they are only appreciated as two, if a certain small interval of time has elapsed between their application." His experiments show the refractory period to be from one-tenth to one-twelfth part of a second. From this he draws the following conclusion: "It would further appear that it is not possible to perform a succession of voluntary movements such as is involved in the movements of the fingers in playing a musical instrument or the movements of the mouth in speaking, at a greater rate than this, and Richet found from experiments upon himself that he was unable to "think" words at a greater rate than about ten to twelve syllables per second. Thus the rapidity of neural processes has a physiological limit imposed upon it by virtue of the refractory period of the nerve cell." The accuracy of these experiments, so far as they pertain to the effect of stimulation applied to a single nerve cell, cannot be doubted, but Schäfer fails to show that several nerve cells may not act simultaneously or in very rapid succession. Again he does not give his reason for assuming that counting is the brain's most rapid function. On this point I have been able to secure the opinion of three musicians of note and the unanimity of opinion is remarkable. I presented this question: Taking the most easy music, how many notes can you read and correctly play upon the pianoforte per minute? The first, after experiment, returned the answer, "1,900 per minute," nearly 32 per second. The second answered, "scale passages in the middle of the keyboard, 1,900 per minute. Pieces of chords alone, 1,600 per minute. Pieces of runs and chords, 1,200 per minute." Or from 20 to nearly 32 per second. The third, who was the musical critic for a London paper, with his pencil figured it out at 1,800 per minute, or 30 per second. The accuracy of these experiments can no more be doubted than can those cited by Schäfer and the difference in the results obtained can only be ascribed to education. What

⁷Text Book of Physiology, vol. 2, p. 615 (Prof. Schäfer).

part of this education consists in shortening the refractory period, what in shortening the reaction time or the establishing of lines of least resistance in the nervous system, and what in the acquired ability of concentrating the energy of many nerve cells upon a single object, it is impossible at present to say. It is probably a combination of all.

Physiologists have, thus far, failed to define clearly between brain impulses and spinal reflex. A fly will prune its wings long after it has been beheaded. If placed upon its back in water a recently beheaded eel will assume its normal position. A spinal frog will give decided indications of discomfort if plunged into hot water, though it will allow itself to be boiled without moving if the temperature of the water be gradually raised.

The manifestations of spinal reflex are less and less as we ascend the intellectual scale, until, Sherrington⁸ says, "After total rupture across the spinal cord in man, the reactions of the isolated portion are never conscious." In man, therefore, every motion which is directly associated with consciousness must be attributed to the brain.

With these facts in mind, let us return to the illustration of the pianist. The student, in his first efforts, slowly studies out one note at a time, then, turning his attention to his instrument, seeks for the key indicated by that note.

After a vigorous mental effort the impression caused by the sight of the note results in a musical sound. This impression travels from the eye to the occipital sensory area. Thence it is transmitted to the motor area, being, in its passage, transformed and co-ordinated into a purposeful impulse. In this form it is dispatched upon a real trip of exploration. Between the motor area of the brain and the finger there are hundreds of ways where the impulse may go astray, hundreds of by-ways which should be transformed into main thoroughfares and hundreds of synapses which, through want of use, are undeveloped, causing unnecessary delay. If at last the impulse reaches its destination it will only be after traveling a difficult and circuitous route.

Gowers⁹ tells us that "Lines of various resistance exist by which the functional combinations are determined. 'Muscular education' is largely the establishment of these lines of least resistance in the

⁸Schäfer's Text Book of Physiology, vol. 2, p. 859.

⁹Diseases of the Brain, p. 5.

nervous system. They constitute the physical basis of habit." After years of practice these nervous routes become so perfectly established that the impulses pass so easily and so rapidly that the musician is no longer able to count the individual impulses and is only conscious of a single effort. So long as there is the least consciousness of the separate efforts authorities agree that they originate in the brain, but so soon as that point is passed they have been said by some to be the result of "habitual reflex"; suggesting by the name that the impulses are then turned over by the brain to the lower centers. Is this a reasonable supposition? The only object for the transfer would be to secure a shorter and more easy route. Is there a nerve route from the eye to the finger shorter and more easy than the one already described?

That more than thirty notes may be comprehended in a second, and that these impressions may cause as many purposeful motions, does not prove that these are reflex motions, but that counting is not the brain's most rapid function.

The illustration of the pianist has been taken and carried to this length because the achievements of the pianist can so accurately be measured. One thing more and the illustration may be passed. Many years ago experience taught that which science has confirmed: That these nerve courses may be brought to their greatest perfection, practice must begin in early youth and be continued without interruption. What measure of success would the pianist attain who deferred his practical work upon the instrument until he had acquired a classical education and a thorough knowledge of the theory of music?

Stewart¹⁰ says, "The more refined and complex movements are in general brought about not by the abrupt contraction of crude anatomical groups of muscles, but by the contraction of portions of muscles, perhaps even single fibers or small bundles of fibers, while the rest remain relaxed. The excitation may gradually wax and wane as the different stages of the movement require. Antagonistic muscles may be called into play to balance and tone down a contraction which might otherwise be too abrupt."

Watch the finished operator and see how beautifully he illustrates these words. Think of the versatility of impulse that is required for his most delicate manipulations. Is the result less

¹⁰A Manual of Physiology, p. 736.

wonderful than that attained by the musician? By what miracle is the operator to attain, when youth is passed, that which it would be useless for the musician to attempt?

Behind each of these motions is the brain, prompting and guiding the most minute detail. Added rapidity or delicacy of touch does not indicate a lower origin of impulse, but a higher culture.

The nervous connection of the brain with the hand is physiologically the same as with the vocal organs. We do not speak of the arguments of the advocate as mere tongue skill. While the thought of the speaker may be mainly centered upon the argument as a whole, there is an under-thought which guards the choice of each word; there is a consciousness that the life of his client may hang upon so small a thing as an inflection. Parallel is the case of the surgeon. Intent upon his operation as a whole, there is ever present that under-thought which guides his knife, and the same consciousness that the life of his patient depends upon the exactness of each separate motion of his hand. There is, then, no such thing as finger-skill. Where there is skill there must be brain impulse.

It is not strange that Professor Huxley, who could command such language as has been quoted, should give to speech the first place among the special attributes of man, but, even counting writing as belonging to speech, it must be conceded that man's best thoughts have been expressed by means of the hand. That which has been done is of more value than that which has been said. When speech fails the hands are called to the rescue.

In the patent office at Washington there are thousands of models, which were placed there to illustrate that which words could not say.

The architect's means of communicating his ideas to the builder is one of many illustrations which could be given to show that where accuracy is required spoken language cannot be depended upon. Not alone in the intensely practical is the hand superior, but it is also the chief delineator of imaginative art, such as painting and sculpture.

It seemed desirable to speak of the brain and the organs of expression before considering the organs of special sense. In doing this it became necessary to refer to the mind as something already existing. It should be remembered, however, that the mind is *not* born with the individual, but is formed by the impressions received from the organs of special sense. If we include under the sense of

touch the sense of pain, heat, cold and muscular sense, a person congenitally deprived of all the special senses could have no consciousness and, therefore, no mind. Man was given five special senses that he might have five means of observation. That he may observe correctly, each sense must be trained and developed. The seeker for knowledge must neglect no means of observation.

In considering the organs of special sense it is worthy of note that those of sight, hearing, smell and taste seem to be better developed in some of the lower animals than in man. In the sense of touch alone is man unquestionably superior. All the senses may be improved by training, but this is especially true of the sense of touch. This fact and the importance of this sense as a means of acquiring knowledge are illustrated in the case of Miss Helen Keller, who is both blind and deaf. Deprived of those senses which are usually employed in acquiring knowledge, she has become a highly educated woman without language, except that which passed to and from her brain by way of her hand, her mind was formed. She has now, by means of touch, even learned to speak.

It has been assumed that touch is second in importance to sight, but Miss Keller's achievements lead one to doubt this assumption. Touch, surely, more than any other sense, is associated with consciousness.

The hand is not only the chief organ of expression, but it is also notably the organ of touch, there being seven times as many touch spots at the end of the fingers as in the same area between the shoulders.

Twenty-four hundred years ago Anaxagoras taught that the superiority of man was solely due to the fact of his having hands. While not taking quite such an extreme view, it is maintained that the hand may be one of the greatest collectors of facts and *the* greatest imparter of ideas. It is the only door to the brain which swings both ways and no mind can reach its greatest development while this door remains closed.

I have endeavored to draw logical and just conclusions from premises based upon the best authority, and if these conclusions are correct classics, science, even physiology itself, seem to have been taught with an absurd disregard of physiological laws. Of the five doors for the reception of knowledge instructors have been content with partially opening two, totally neglecting the other three. It would be an experiment worthy of trial to do as nature

designed and broadly open all these doors ; to train, develop and co-ordinate all the special senses until they work together in common ; in other words, *to teach as a science common sense*.

Equally unnatural is the idea of treating the organs of expression as if they belonged to different castes or were of unequal importance. Every technical school, exclusively such, is a monument to the prejudice and narrow-mindedness of the age. Long ago we should have learned that any school without workrooms is as unworthy the name as one without classrooms. As well be without books as without tools. The laws of science, especially those of physics, should be drilled into a boy in the workroom until they become a part of his nature, just as the rules of grammar are drilled into him in the classroom. Each will assist his mind to receive the other. To comprehend the extreme length, breadth and thickness of the fact that two and two make four is a store of knowledge in itself, but it is knowledge which extends beyond the domain of mathematics and can only be fully grasped by the student who has put two and two together with his own hands. He may in the workroom, as nowhere else, learn to grip facts as he grips his hammer handle. When science is taught in this way the hands will train themselves and, incidentally, the nerve courses will be developed ; classics and science can then be carried to any extent without danger of unfitting the student for his specialty. Another advantage which would arise from teaching and holding examinations in common sense would be that the student who was found hopelessly deficient in one or more of the special senses would be prevented from entering a calling for which he is physically unfit.

This, then, is an outline of such a course of study as physiology appears to dictate and one which would equally well serve as a preliminary preparation for any profession or occupation.

I am aware that this plan of study, in itself, is not new. The curriculum of the best American dental colleges is now framed on almost ideal physiological lines, but was not this curriculum arrived at empirically ? Did not those intensely practical men who shaped this course, building better than they knew, adopt one method after another simply because it seemed to promise the required results ? Do our dental educators, even now, realize the fact that they have arrived at the fundamental scientific law of education ? I think not, or they would be more positive in their position and more imperative in their demands that preliminary education be conducted according to this law.

If our present preliminary course is unsatisfactory, viewed from a physiological standpoint, that which has most often been suggested as a substitute is worse. Let us see where our friends, who maintain that the preliminary to the dental course should be a university training, supplemented by a medical course, would lead us. I give those who recommend this course credit for being sincere and that they recommend it solely because they believe that the knowledge thus acquired is necessary to the highest attainments in dental practice. If this is their belief they will not advise the student to curtail these courses nor to strive to make them overlap. Prepared in the usual way, the boy of average ability cannot be fitted to appreciate and to receive the greatest good from his college course before he is eighteen years of age. To derive the full advantage from his university studies four years must be exclusively devoted to them. Five years is all too short a time in which to master the theory of medicine. Thus we find our student at twenty-seven with a wonderful store of knowledge, but with his cranial sutures closed and his nerve courses fixed, absolutely devoid of skill, except that which he has acquired in his debating club or in the dissecting room. With these physical defects his dental training should be longer rather than shorter than usual, but counting only four years for that, he will have reached thirty-one, a charming man no doubt, but one to shine in the drawing-room rather than in the surgery.

Of those who have seriously advocated such a preparation for the practice of dentistry I especially ask an equally serious consideration of the physiological possibilities and limitations in education.

CARBONIZED COTTON AND ITS VARIOUS USES IN DENTAL PRACTICE.*

BY A. JESSEL, D. D. S., STOCKHOLM, SWEDEN.

We are living at present in an age when new inventions, new material and instruments and new methods of work are brought before our notice with such wonderful rapidity that we often find ourselves doubting and asking "What next?" It is therefore not very strange that we should be inclined to look upon each new

*Read before the American Dental Society of Europe, August, 1902.

method with a good deal of skepticism and reserve, especially when—as is often the case—these bright, promising lights vanish like meteors, perhaps never more to be seen.

Conscious of this feeling, so prevalent just now in the dental profession, one should indeed hesitate in bringing before so learned a body as is assembled here to-day a material and method which is to a large majority of those present no doubt new, were I not confident that the subject which I am about to present has long since been weaned from the cradle of experimentation, and now stands before us strong and firm and ready to defend itself against all attacks which may possibly be made against it.

Carbonized cotton has stood the test of about twenty years of private practice. It has, moreover, been used at the Dental Hospital and Clinics in Sweden, as well as in other parts of Europe, for many years, and has proved itself to be a material “par excellence.”

Articles on the uses of carbonized cotton have appeared in various dental journals both in America and Europe, but it seems that the subject has not attracted sufficient attention, as is evident from the following brief extract from the *Dental Gazette*, appearing in the June number of the *Dental Cosmos* (p. 654). The article is in regard to the “Treatment of Pulpless Teeth.” It runs thus: “Mix powdered charcoal into a paste with creosote; with a broach carry the medicament into the canals. If care is observed the dressing can be carried to the apex without difficulty. With this treatment aching teeth have been permanently soothed where many other remedies have failed.”

It was on seeing this article that I determined to write a short paper on the various dental uses of carbonized cotton, showing at the same time the advantages this material has over others now in use for the treatment of exposed and aching pulps, for gangrenous pulps and their complications, as a vehicle for carrying medicaments in devitalizing and treating teeth, as a hemostatic after extraction, and last, but not least, the permanent filling of root-canals of all teeth, both temporary and permanent.

I am sure that, had the writer of that article on charcoal as a treatment of pulpless teeth, read Dr. Elof Förberg’s paper on “Carbonized Cotton” printed in the *American Dental Weekly*, May, 1898, he would readily see what an advantage the carbonized cotton has over ordinary charcoal such as he uses. It is to Dr. Förberg that the credit of introducing carbonized cotton into dental practice is due, and it is to him, therefore, I extend my thanks

for having taught me the use of a material which has so wonderfully lightened the burden of hitherto difficult operations, and which has proven such a wonderful boon in my hands.

But many of you will perhaps be asking, What is carbonized cotton and how is it produced? As its simple name implies, it is cotton which, by a certain method of treatment, has been reduced to a state of carbon. But it differs in many respects from the ordinary forms of carbon, and especially charcoal, in that it is naturally far more pliable and finely divided, while at the same time it has a fiber. Owing to its extreme fineness and its being considerably more porous, it is therefore far superior to charcoal as an absorbent of liquids and gases.

It may at first appear that this material is difficult to manipulate, because when dry it very readily crumbles between your fingers and is reduced to a fine powder. This, however, is easily prevented by simply moistening the cotton with alcohol, which can afterward be very rapidly evaporated.

To the alcohol can furthermore be added any other desirable antiseptic. A good quality of pure absorbent cotton with a fine fiber is selected. This is first saturated with boracic acid and then placed in an air-tight iron retort. The retort is then slowly heated up to almost white heat, whereby the cotton is gradually reduced to carbon. The material thus produced will no longer burn, and this is a quality which so materially enhances its value as an agent in the treatment of teeth and as a dressing, or for wounds after extraction.

This is unquestionably an epoch of asepsis. Our highest aims are not so much as formerly to put our chief trust in antiseptics, but to approach nearer and nearer that desirable stage when amongst the first qualifications for a successful dental operation comes the necessity of having our field of operation and everything we work with *aseptic*. True, the conditions of the mouth are such as to make this impossible in every instance. Cases will arise where, with the most careful manipulation, it will be impossible to keep our field of operation clear of bacteria-laden fluids, etc. Yet, wherever we can, our conscience ought to tell us it is our duty to work aseptically.

Carbonized cotton can be held over the flame of a Bunsen burner or an alcohol lamp and thoroughly sterilized. Its fibers undergo no change whatever. On the contrary, its value as an absorbing agent is thereby greatly increased and it is remarkable with what

rapidity it will absorb any medicament with which only a very few of its fibers may come in contact.

Carbonized cotton is an excellent material for allaying odontalgia due to an exposed or vitiated pulp. It is so extremely soft and non-irritating that it can be placed with impunity over an exposed pulp. You can use any of your favorite obtundents in connection with it. Dip a little of the well-condensed carbonized cotton into the medicine, place it carefully over the offending pulp, and carefully seal the cavity with a temporary stopping. For this purpose I preferably use Dr. Forsman's formalin cement, as it hardens rapidly, adheres to the walls of the cavity, even in the presence of moisture, is in itself a powerful antiseptic and can be easily removed when required. In like manner carbonized cotton can be used as a pulp capping in all cases where the walls of the cavity are not so thin as to allow the black cotton to show through. Like all carbon, it is a poor conductor of heat and electricity, a thing to consider in pulp capping.

As a carrier for arsenic in devitalizing pulps it is very useful on account of the ease with which the paste can be applied precisely on the spot required, and the absence of any pressure or irritation resulting from it. In using it for this purpose my method is to saturate a small portion of the carbonized cotton with any suitable antiseptic, such as carbolic acid and oil of cloves equal parts, remove the excess of fluid with spunk or bibulous paper, so as to have the cotton just moist. I then take up a small quantity of the paste on a spatula, place on the carbonized cotton as I hold it between the points of my dressing pliers, and then carefully carry it home. The carbonized cotton being so very light and moist is almost drawn to place by capillary attraction, so to speak. Another piece of moist carbonized cotton larger than the former is then placed over the first piece, and the cavity hermetically sealed. I have never had any pain resulting on account of undue pressure upon an exposed pulp when applied in this way, and sealing as above stated with formalin cement mixed rather thin.

As a hemostatic after extraction, as well as for treating other lesions of the mouth, it gives most satisfactory results. Its advantages here over the ordinary cotton are very marked indeed. In the first place, we are always sure of a perfectly aseptic dressing. Secondly, it is capable of absorbing a far greater amount of antiseptics or blood-coagulating remedies, and thirdly, it is a hemostatic

in itself. Its pliability allows it to be placed into the socket of an extracted tooth without causing the slightest pain or inconvenience to the patient. While the ordinary cotton soon decomposes and becomes offensive, the carbonized cotton, by reason of its absorbent, deodorizing qualities, remains sweet a much longer time. It is a well-known fact that the removal of a cotton tampon from the socket of a tooth very often causes secondary hemorrhage. The carbonized cotton, on the contrary, does not irritate the tissues in the least, if only ordinary care is used in its removal. This is greatly facilitated by syringing the wound with a warm antiseptic solution and using wide-beaked dressing pliers to remove the larger portion of the material. When this is carefully done the wound will be sweet and clean and show no signs of recurring hemorrhage.

I usually use a 3 per cent solution of peroxide of hydrogen, together with the carbonized cotton, and have in this way checked some of the most obstinate cases of bleeding. The rapid evolution of oxygen which takes place when the peroxide comes in contact with the blood has a tendency to eject the soft carbonized cotton from the socket. This, however, is readily prevented by applying a small mouth napkin or the like over the wound, or simply by holding your finger over the dressing until the frothing ceases. The use of digital pressure is, by the way, a most effective way of stopping hemorrhage. The patient can be dismissed in a few moments, with instructions to return the following day to have the dressing removed and the wound syringed.

Having now spoken of some of the minor uses of carbonized cotton, I come to that difficult, and often on that account much-abused, branch of your profession—viz., the treatment of pulpless and putrescent teeth, and the proper filling of root canals. It is here that all of the many excellent qualities of carbonized cotton are brought into full play and the most gratifying results obtained.

I know that the ground upon which I am about to trespass is a very much debated one. So many new methods have been continually recommended that at present our stock of materials for this branch alone is very large. It is not my wish or intention to add to that store a new material—for the truth is that the material is not at all new, but is old and tried, and the fact that it is not more widely known is no fault of the material itself, but must be sought for elsewhere. I want simply to show, as clearly and concisely as possible, what advantages the carbonized cotton has over

the other materials now so generally in use and so universally taught in our text books.

I think that most writers agree that a material suitable for the filling of root canals ought to possess the following properties:

1. Adaptability and ease of manipulation, so as to insure a perfect filling, even in cases of very minute and crooked canals.
2. It must be unchanged by surrounding influences.
3. Non-irritating to soft tissues.
4. Should be at least aseptic when applied, and preferably antiseptic.
5. Impermeability, thus perfectly sealing the apical foramen.

To these we may also add the property of absorbing gases, which in spite of all treatment will sometimes develop in the canals, and the capability of being easily removed in case it should become necessary.

The materials generally used and recommended for the filling of root canals do not, in my opinion, fulfill all these requirements. Gold can certainly be made aseptic, and is unaltered by surrounding conditions—but its introduction into small curved canals is very difficult, if not entirely impossible. Shredded tin, copper, and lead points are open to the same objection.

Wood and gutta-percha points are not aseptic, are porous, and soon decompose, giving rise to obnoxious gases. Gutta-percha points are, moreover, very apt to be forced too far, and some of the soft material may be pressed through the apical foramen.

The cements are all more or less irritating to the periapical tissue, and are not stable. A very common occurrence on reopening canals which have been filled for some years with cement, is to find them entirely, or at least partly empty, and in a more or less septic condition, as evinced by the foul odor emanating from them. Cotton combined with a variety of antiseptics has been much used and praised by some, while others again have unmercifully condemned it, so that at present its place as a root canal filling is rather uncertain.

Thus it seems that our supply of root-filling materials is still very incomplete in the light of the many objections which can be raised against nearly all of them.

After having experimented many years to modify the ordinary cotton so as to make it insoluble and non-decomposing, Dr. Förberg finally found in the carbonized cotton exactly what he was so eagerly in search of. At first its black color and its brittleness

seemed to stand in the way of its usefulness as a root filling, but these factors were soon reduced to a minimum, or almost nil, by following certain methods of procedure. The brittleness is entirely removed as soon as the material becomes moist, hence the addition of a fluid antiseptic serves a two-fold purpose. We have then a material which is not only aseptic, but also antiseptic. Indeed, the dry carbonized cotton is in itself an antiseptic, owing to the presence of anhydrous boracic acid with which its fibers are impregnated.

Carbonized cotton does not irritate the periapical tissue in the least. I have often, when treating abscesses with fistulous openings, forced some of the material entirely through the tract without causing any pain or inconvenience. Of course the material in this case was very finely divided.

Owing to its extreme softness, and I might almost say plasticity, it can be forced into the finest canals where even a broach cannot penetrate. Its value as an agent for filling tortuous canals becomes therefore self-evident. Carbonized cotton does not clog or obstruct the canal as the ordinary cotton does. Should there possibly be any tendency on the part of the material to roll together and stick, the obstruction is immediately removed by forcing a fine smooth broach through the mass. The cotton is hereby partly pulverized, and the blockade broken up. Carbonized cotton does not decompose or dissolve out of the canals. A root once filled with it, and the pulp chamber securely sealed remains filled indefinitely. Its black color is no drawback if the precaution is observed to let the root filling extend no farther than the gum line, or rather not even reaching the gingival margin. It causes no discoloration in the tooth itself; on the contrary, it tends to preserve its natural shade by absorbing any gases or fluids which *may* develop after the treatment is completed.

The treatment of gangrenous or abscessed teeth becomes rather a pleasure than otherwise when working with carbonized cotton. I remember very distinctly my first experience with the wonders of this peculiar material. I had been treating a gangrenous upper second molar in a boy of about fourteen. The root canals were extremely wide and long, and there was a mass of decomposed and foul-smelling pulp tissue in all three canals. I cleansed them mechanically as thoroughly as I could, and used sulphuric acid repeatedly, each time sealing in some of the acid on a bit of ordinary cot-

ton. This treatment was continued daily, but every time the cotton was removed there was the same disagreeable, foul odor. One day, after having treated the case about five or six times, Dr. Förberg happened to come into my room while the boy was in the chair, and I told him about the case. He saw I was using the ordinary cotton for sealing in my acid, and said: "Why don't you use the carbonized cotton; that will soon help you." Well, I did as he told me. Next day I saw my patient again, and was quite surprised, not to say dumbfounded, at the lack of any odor other than that of the sulphuric acid and ether I was using.

This, my first experience of the great value of carbonized cotton in the treatment of teeth, was quite sufficient to establish its reputation in my estimation, and I have never since had any complaint to raise against it. It has stood by my side in my hardest struggles against abscessed teeth, and even buccal fistula, and has proved to be of the greatest value to me as well as to my patients.

I wish in passing to say just a word in regard to the sulphuric ether preparation for the treatment of putrescent teeth and for enlarged or constricted canals. We are familiar with the Callahan method and the good results following it. But we in our practice have obtained even better results from the preparation which Dr. Herbst recommends for obtunding sensitive dentine. This is prepared in the following way. A small portion of C. P. concentrated sulphuric acid is put into a glass vial, and to this is added sulphuric ether, stirring constantly with a glass rod until the acid is saturated. This is easily ascertained, for the excess of ether floats on the surface of the acid as a lighter colored liquid. This superfluous ether is then allowed to evaporate. Dr. Herbst also adds a few crystals of hydrochlorate of cocaine, and I find the addition very favorable, acting as it does as an obtundent. This chemical compound has great penetrating properties, and it is this, together with the fact that it can be quickly evaporated with warm air when desirable, which makes it so much more valuable than the sulphuric acid alone, such as Dr. Callahan uses. Its action, moreover, seems to be less irritating than the above.

I shall not dwell on the method of employing this preparation, as that does not differ from Dr. Callahan's, with the exception of course that I use the carbonized instead of the plain cotton, and thus get the full action of the acid; while in Callahan's method much is absorbed and destroyed by the cotton which, unlike the carbon, is not inert.

The removal of the old carbonized cotton at each sitting is very readily accomplished. A fine barbed nerve broach is used to loosen up the mass, or a small sized root canal drill in the engine may be employed. A jet of water from a fine pointed syringe passed up into the canal quickly removes the cotton, the whole operation being very rapidly and easily done.

When the canals have been thoroughly treated and prepared as usual for a root filling, we are ready for the introduction of the carbonized cotton. A small quantity of the material is taken up, and perfectly annealed. We now have it aseptic. It is then dipped into any suitable antiseptic, or simply into alcohol to have it moist and facilitate its manipulation. Where there has been a gangrenous pulp a 10 to 20 per cent solution of formalin with eugenol is preferable. With long, narrow-beaked dressing pliers a small portion of the cotton is carried up into the root canals and to the apex by means of a smooth, square-pointed root canal plugger or jeweler's broach, the length of the canal having been previously marked on the same. A slight zig-zag motion prevents the instrument from slipping past the cotton. Always use as large a broach as the portion of the canal under treatment will permit. Approaching nearer the pulp chamber, larger pieces of cotton and a coarser broach are used. Each piece is carefully condensed, being mindful, however, not to use too much pressure while working near the apex. As soon as the canals are flush the whole mass is thoroughly pressed together with a piece of spunk. Any surplus is removed, and the cavity in the crown carefully washed out with alcohol and cotton, or bibulous paper. The filling is again condensed with spunk, and finally dried with hot air. It will be evident that the drier the carbonized cotton is when finally in place, the greater will be its value as a gas or fluid-absorbing medium. The final filling, be that gold, amalgam, cement, porcelain, or any other, can be placed directly upon this root filling, still I prefer filling the pulp chamber or end of canal independently, and think that for this purpose gutta-percha answers best.

I have had several cases come to me from other dentists where the canal has been perforated at some point, and the tooth has consequently given trouble. In such cases the carbonized cotton has always come to the rescue. I then use a milder antiseptic, such as nitrate of silver, or a preparation which of late is being considerably used in dental practice, viz., chinisol. I use this as a powder incorporated with glycerin and alcohol, and saturate the carbonized

cotton with it. If care is exercised not to use any pressure over the perforation the tooth will return to its normal state of quietude, and the patient experience no further trouble.

As a mummifying agent the carbonized cotton and formalin 20 per cent solution works beautifully; any small portions of pulp tissue which may be out of reach of either root canal drill or nerve broach will be rendered entirely harmless.

Carbonized cotton also makes an excellent root filling for the temporary teeth. Its softness and non-irritating qualities especially adapt it for this class of work. It should be placed very lightly into the canals, so as to cause no pressure to the periapical tissue. The use of strong antiseptics should, moreover, be avoided.

In cases of re- and implantation, the carbonized cotton filling in the canal will cause no irritation whatever, and the tooth therefore will have more likelihood of being retained still longer.

There is still much that could be said in favor of this very useful material—but my time is up. I have already taxed your patience far more than I had originally intended. I hope, however, that my efforts have not been entirely in vain, and that some time you will give carbonized cotton a fair trial. I should like to see it occupy a place in our text books among the other materials now mentioned there for the filling of root canals. I wish teachers of operative dentistry would experiment with this material. Once you have become thoroughly acquainted with all its excellent qualities I feel sure you, too, will reiterate the high praises which for many years have been uttered by operators from different parts of the globe.

OPERATIONS FOR PALATAL DEFECTS, ILLUSTRATED WITH STEREOPTICON.*

BY TRUMAN W. BROPHY, M. D., D. D. S., CHICAGO, ILL.

The first picture projected upon the screen represented the usual form of cleft palate, showing the fissure through the alveolar process on the left side. The speaker began by saying that from eighty-five to ninety per cent of all cases of single hare-lip appeared on the left side. These cases are amenable to successful surgical treatment. Numerous pictures of cases of cleft palate and hare-lip were

*Abstract of remarks before the Chicago Dental Society.

projected on the screen, showing the condition of the patients before and after operative procedures.

The speaker showed a picture which illustrated congenital cleft palate, the fissure extending through the palatal plates of the maxillary bones, and said that the first step to be taken to close this fissure was to make use of curved periosteotomes. Pictures of these instruments were projected on the screen. He divides the mucous membrane at the border of the cleft and elevates all the soft parts from the hard palate, including the periosteum. After having denuded the hard palate of periosteum, paring the edges of the cleft throughout the entire length of the soft palate is the next step, as well as of the soft parts removed from the hard palate, dividing also the membranes at the distal surface of the horizontal plates of the palate bones. These membranes cover also the nasal surface of the palate bones, and extend down to form the superior distal surface of the soft palate. This done, the soft parts readily fall together, and the surgeon sees that there is no necessity of making lateral incisions into or through the palate. Moreover, the danger of non-union just at the termination of the hard palate is very materially lessened, and the holes which are frequently found after operations in the location named are almost invariably avoided. Oftentimes the splitting of the border of the soft palate, especially in cases where the tissue is quite thick, he has found serves every purpose, as the mucous membrane divides and furnishes sufficient freshened surface of muscular tissue to secure good union, and thereby avoid the removal of any tissue whatever in this part of the palate, which is oftentimes very desirable.

After the edges of the cleft are well freshened, a properly formed needle, curved after the fashion of the needle of the gynecologist, is employed, with which to introduce silk sutures, four of which are carried through the tissues, and these are substituted by No. 22 silver wire sutures; then the lead plates, No. 22 American gauge, are perforated with holes corresponding to the number of sutures to be employed, shaped so as to extend from the anterior margin of the fissure back to the distal border of the soft palate, and bent to conform to its shape. The wire sutures are then passed through the holes and twisted together. Before the lead plates are fixed in place, coaptation sutures should be introduced, but not tied until tension is exerted by means of the wire sutures, and lead plates upon the divided portions of the palate, and their edges approximated.

After the edges of the palate have been approximated, the silk coaptation sutures may be tied to hold the approximated edges in close contact and thus secure immediate union.

The advantages claimed by Dr. Brophy for this method of procedure are:

1. The prevention of the cutting out of the sutures, since the lead plates coming in contact with the soft palate exert pressure thereon, and consequently the tension is not made by the sutures alone, which exert pressure on so limited a portion of the tissue, but it is upon the entire length of the palate covered by the lead plates.

2. The lead plates serve as a splint, rendering the palate inflexible to a very great extent. The movements which are almost constant are suspended. The active muscles are put out of use until union of the cleft may take place. After using this method of closing the soft palate, he feels confident that better results can be obtained than by the employment of sutures alone.

In cases where the palate has not a sufficient length to perform its functions after operation, this defect may be overcome by making use of the palato-pharyngeal muscles. These muscles are usually developed far more than normally, and may be seen as broad, flattened bands of muscular tissue, extending from the palate downward and outward, to be inserted into the posterior part of the thyroid cartilage. By utilizing two-thirds of each muscle, and bringing them to the median line and uniting them, the palate may be lengthened to almost any extent required.

Dr. Brophy says that his experience in operations performed for the closure of cleft palate, at from ten days to three months of age, has more and more confirmed his opinion and justified the practice. He believes in operating at as early an age as practicable after birth, usually within the first three months. He set forth his reasons for operating as early as possible in infancy.

After going at length into the details of technique of the operation, he spoke of the after-treatment, which he said was very simple, consisting solely of antiseptic cleanliness of nose and mouth, at least twice a day; stimulants, if indicated, the first twenty-four hours; preventing the child from disturbing the parts or introducing into the mouth anything that might interfere with the sutures; paying special attention to the care of the bowels; using alcohol sponge baths if the temperature rises above 100° F., and nourishing the patient on liquid food given by means of a spoon.

He firmly believes that the operation should be made upon the palate before that upon the lip, saying it is a great mistake to commence at the oral opening, and partially close the only aperture through which a subsequent palate operation must be made. The surgeon needs all the space that can be secured, which is none too much in a small child. The lip operation is comparatively simple and trivial, and it can be performed at any time; but the palate operation is made much more difficult if prior to that the lip has been closed.

As the result of his observations and of operations upon palatal defects, he summarizes as follows:

1. Longitudinal incisions through the soft palate made for the purpose of relieving tension are not only unnecessary, but are injurious to the palate and its functions.
2. Lead plates fixed with silver sutures serve as splints in adults and children over six months old. Besides, when this method is employed, sutures do not cut out.
3. Short palates following operations or from other causes may be lengthened by surgical methods, and the voice restored.
4. The most favorable time in life for operating is between the age of two weeks and three months.
5. The rigid stiff palate following operations is due to two causes, both of which could be avoided. First, failure to lift the soft parts from the hard palate, thus lowering the vault and lengthening the palate; second, the making of incisions through the palate to relieve tension.
6. The parts must be thoroughly irrigated and carefully watched and cared for until union is complete.

THE MANUFACTURE OF A PORCELAIN CROWN FROM BEGINNING TO FINISH.*

BY E. M. S. FERNANDEZ, D. D. S., CHICAGO, ILL.

Mr. President, Ladies and Gentlemen:

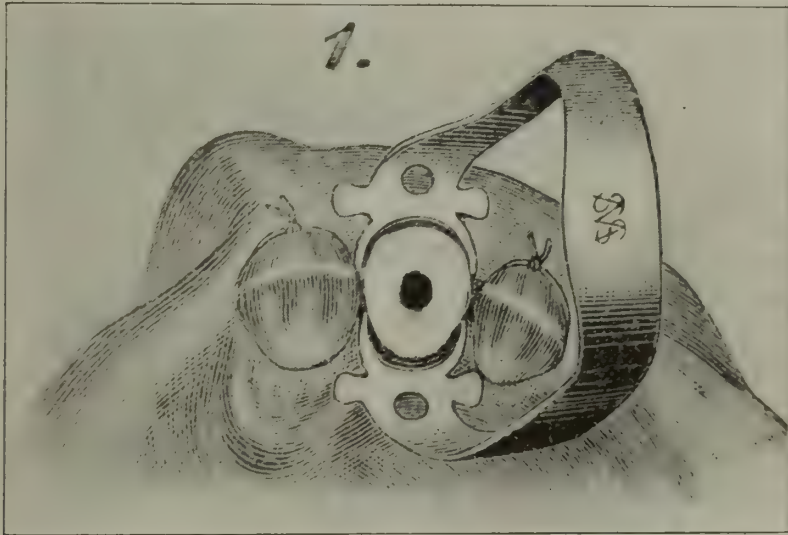
I hope you will kindly bear in mind that the paper I have the honor of reading to you this evening is intended for practitioners, and that although the method described in it may be ever so practical there are exceptional cases, where the dentist is called upon to vary and use his own judgment.

*Read before the Chicago Dental Society, May, 1902.

Dental porcelain crown work, properly done and judiciously applied, is certainly one of the most useful and gratifying services the conscientious dentist has ever offered to his patient. It well deserves the name it bears. It is indeed the crown of crowns.

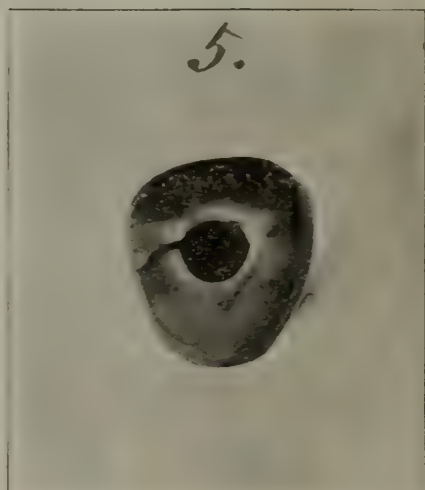
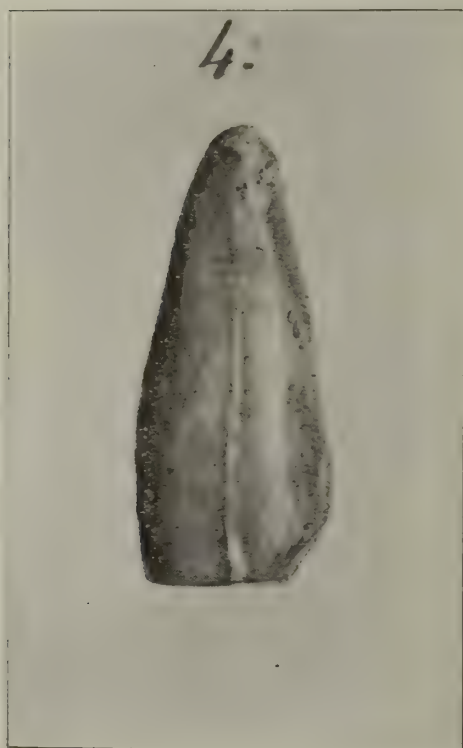
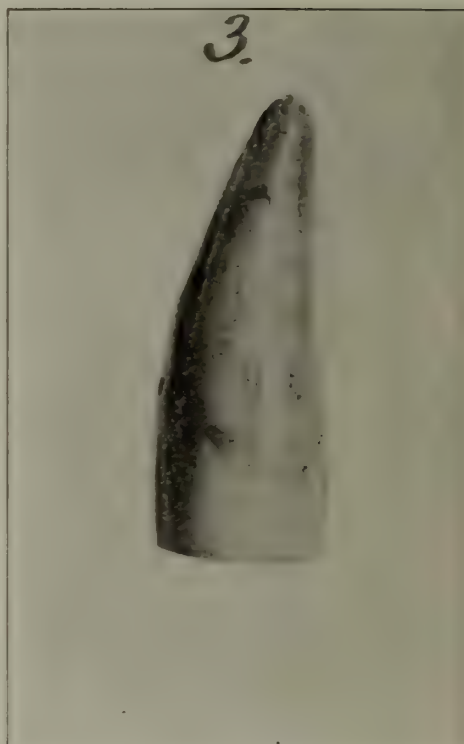
The making of porcelain crowns for the four upper incisors and upper and lower cuspids generally requires a similar manipulation throughout, so, for convenience, we will consider the making of an upper right central incisor, the pulp already destroyed.

The mouth is carefully cleansed by means of an antiseptic or disinfectant solution in the form of a spray and mouth wash, and a careful examination is made of the organ to be crowned, as well as the adjacent teeth, in order to ascertain whether the parts are in a reasonably healthy condition or not. If the parts are found in good condition and no abscess present, the work may be commenced by grinding off the ragged edges of the root, leaving about 1-16 of an



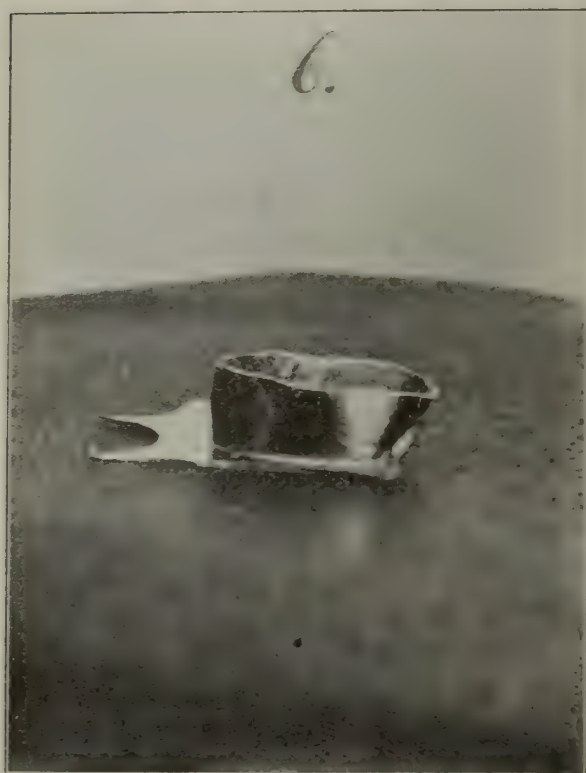
inch of material from the cervical margin. The rubber dam is then applied to the root and one tooth on each side of it, and held in place by means of ligatures clamps, or wire splints cemented to the adjacent teeth as in Fig. 1. The root is then carefully disinfected, cleaned, reamed out to a caliber slightly larger than the post to be used and sealed permanently at the apex. (Fig. 2. Instruments.) During this procedure care must be taken that all instruments and parts worked upon be kept well disinfected. For this purpose I am partial to the use of 95 per cent carbolic acid to keep the root canal disinfected and an alcohol flame to keep the instruments sterilized.

The open root canal may now be closed with any temporary stop-



ping, the rubber dam removed and the patient dismissed to the next sitting. It is a good practice to allow the root to rest for twelve or fifteen days after this preliminary work is done. If so desired a temporary crown may be fitted to the root and attached with gutta-percha. If after fifteen days the parts have shown no signs of infection, the work may be continued as follows: The organ to be crowned is ground off to the gum margin, but no farther; the enamel cleaned, scraped and ground away by means of cleavers and diamond disks. (Fig. 3. Lingual aspect.) The part of the root, which is to be covered by the band, is dressed down to a slight taper, just off the parallel shape all around, except on the labial face (Fig. 4, distal aspect), where a decided slant or bevel is ground off by means of a small diamond disk, and the angles at each side of the slant slightly rounded as in Fig. 5. The object of this slant is to allow the porcelain facing to remain thick and strong, and reach well under the gum margin, at the same time retaining the proper gingival arch. It may be well to say now, that it is of great importance to keep the files, scrapers, grinding stones and all such instruments for the exclusive use of porcelain work; should they be used on soiled metals or other materials they will contaminate your platinum or porcelain and be certain to spoil the work during the process of baking. "If extension for prevention is good practice in filling, extension for prevention is also good practice in crowning," therefore to accomplish this a band should be made somewhat similar in shape and position to the natural enamel. A platinum band, 29 gauge in thickness, and about 1-16 of an inch in width, is made and fitted to the root, fitting tightest at the edge farthest under the gum, also fitted to the labial slant by means of small bending pliers, and burnishers; annealing the band often. The surrounding edge of the band at the gum margin is ground even with the ground surface of the root then removed carefully, laid on a piece of platinum plate, 32 gauge, and soldered to same, as in Fig. 6.

Twenty-five or thirty per cent platinum solder is used throughout the work. The surplus platinum is trimmed from the band, leaving the work in the form of a cap or box cover. It is next put back to its place on the root, having previously cleared the root canal of its temporary stopping, and prepared a square platino-iridium post to fit loosely into the canal. A small aperture is made through the cap into the canal and the platino-iridium post carefully driven through into place. The cap and post are now removed together, care being



taken to keep them in their relative position, holding the work by the post with a pair of soldering pliers, or, as in Fig. 7, placing the point of the post into a small aperture on a piece of charcoal. The cap and post are soldered together, and put back in place on the root. An impression and bite are taken; the work is removed from the mouth and mounted in plaster of Paris on an articulator. A porcelain facing should be chosen that will harmonize with the natural teeth in color, shade, size and shape. Said facing is ground to fit in place, its cervical margin reaching well up under the gum over the ground labial slant to the edge of the band, retaining at the same time the gingival arch. The work is now invested, the pins are bent down as near to the cap as possible, squeezed with pliers tight to the post and soldered at that point.

(Fig. 8.) When investing the work at this stage, if a small portion of the lingual side of the band and cap is left uninvested or exposed, being careful to have the investing cover the post well so as to hold the work firm in place, the soldering can be done with an ordinary blow pipe. The work is now cleaned, the band polished and tried in the mouth. The final grinding and shaping are done best at this time. (Fig. 9.)

The work is now in condition to be prepared for the furnace. The porcelain part can be accomplished very nicely in three fires or bakings. First baking—A very high fusing porcelain body of the proper shade is worked in between the facing and the cap at the slant and around the labio-cervical margin, covering over part of the cap, leaving the soldered joint at the pins and post uncovered and clean, so as to allow the free evaporation of gold from the solder. If the tooth is to be made longer or wider or changed in shape it is best done at this time and this same high fusing body used. The work is now baked at a high heat and brought to a dull gloss. This baking will unite the facing to the cap and leave the labio-cervical part ready for the enamel, at the same time evaporate the gold from the solder, avoiding thereby the bubbles, and cracks so often produced by it when the work is done at one baking. If the facing has cracked in soldering, the crack can be ground out and filled in with the body used for the second baking and fired at this baking.

Second baking—A slightly lower fusing body is used; the body of the crown is now built up in two colors of the proper shades, carved to shape, dried well, and baked to a fair gloss, but not too glossy. At this stage the parts that have been changed in length or

width or any irregularities can be ground even and to the proper shape.

Third baking or enameling—The third and last baking is accomplished by using the same previous body ground to a finer consistency which renders it lower fusing. This is mixed thin and spread or coated over all the surface and baked to a clear; clean gloss; which being translucent will show to some extent the color of the body underneath and produce a natural and pleasing effect.

As a word of advice let me urge the following: Wash your work clean before adding your porcelain. Dry your work well before baking. Allow the work to cool in the muffle. The best way to time the baking of porcelain is from the melting of pure gold, and by all means remember that over-baking destroys the translucency and lifelike appearances of the porcelain.

The crown may be fastened to the root in the usual way with oxyphosphate of zinc, the slightly taper shape of the prepared part of the root making the cementing much easier, and the fitting of the band at the extremity more certain.

LOW FUSING BODIES FOR INLAYS.*

By A. E. MOREY, D. D. S., CHICAGO, ILL.

A few months ago I happened to state in this society that the low-fusing porcelains could be manipulated advantageously for a certain class of cavities because they could be placed very quickly.

I presume that is why I pay the penalty of being asked to take this side of the porcelain question which, of course, I consider the wrong side. Color, strength, density of body, etc., being all on the side of the high fusing porcelain and the recent improvements in furnaces making it a possibility to bake *any* body quickly. Yet in reviewing the whole subject as this program is intended to do the low-fusing bodies have a distinct and an honorable place.

Too much was expected of this class of bodies when first introduced and terrible failures were accordingly charged up to them, but we must remember that it was the easy fusing qualities of these bodies which tempted experimenters to take up this more esthetic line of study, and to produce the better bodies of the present day.

*Read before the Odontographic Society of Chicago.

Dr. G. A. Wilson, of Cleveland, O., in an excellent essay on porcelain, found in the October *Cosmos*, 1901, gives a very good definition of porcelain. He says it "is not a chemical compound, it is a mechanical mixture, a solidified suspension of two unsoluble, infusible substances in a fusible silicate which acts as a flux or bond and holds them together." In other words, the alkaline flux, feldspar, acts as the cementing substance for the unfused particles of quartz and kaolin.

We know that the glass bodies when fused make an almost homogeneous structure which is not true of the porcelain. The lowest fusing bodies have the largest proportion of alkaline ingredients. Hence are subject to the greatest amount of disintegration in the mouth.

I will reiterate the principal characteristics of the low-fusing bodies, with which you are all familiar:

- (1) A fusing point below that of pure gold.
- (2) A large percentage of shrinkage.
- (3) Low density and strength.
- (4) Of a color which is limited in usefulness.

It must be admitted that a matrix of pure gold can be made a little more quickly and easily than a platinum one and it becomes less springy under the burnisher. Yet it is liable to be bent in handling and usually needs the support of investment, which takes time.

The shrinkage in low fusing bodies is considerable—from about 15 to 33 per cent—and so this body must be worked with great care. The tendency to globulate in shrinkage necessitates careful additions to previous bakings. These bodies are very brittle and of low density and the danger of rendering them porous through over-baking is very great. Yet when properly worked they have sufficient strength to resist all ordinary mastication.

They ought never to be ground, as the highly glazed surface resists chemical disintegration and I do not think there is any excuse for the porosity caused by uncleanness in working, or through over-baking. These I believe to be the principal causes for bubbling and crackling. Of course all porcelains are porous in proportion to the completeness of the fusing of their ingredients. The fusing *must then* be very sharply watched in the lower fusing bodies. They bake at a moderate heat and passing that temperature renders them entirely valueless.

There are some very desirable colors in this body. Yet when the fine, dense tooth substance in living teeth in the anterior part of the mouth is to be matched they are not so satisfactory for inlays as the higher fusing bodies.

There is a use for these bodies of the better grade which I think I may properly call to the attention of those who have never so employed them, viz., over a biscuited surface of the higher fusing bodies for large inlays, and this is applicable also to crown and bridge work. A thin coating of this material, such as Ash's low fusing body, well glazed over a high fusing body biscuited, will make a very fine finish, uniting in a degree with the harder body it does not seem to be as fragile as when worked alone, and leaves a very dense body of porcelain beneath a fine overglaze which is usually so desirable.

HIGH FUSING PORCELAIN.*

By J. S. BRIDGES, D. D. S., CHICAGO, ILL.

To-day it is no rare or infrequent occurrence for teeth to be presented for our inspection fairly studded with the splendid products of the inlay operator, while but a short time ago the discovery of a well fitted and thoroughly artistic porcelain restoration created nearly as much comment and wonder as would the finding of a precious stone amongst a heap of golden nuggets.

Chief among the important subjects for our consideration along this line of work is the study of the different porcelains as offered us by their respective manufacturers. These porcelains may be classified as high fusing and low fusing. The word high simply implies that that particular porcelain fuses above the melting point of pure gold, about 1,800 degrees F. Any porcelain flowing below such a temperature has incorporated in its component parts a great portion of spar or similar ingredients, resulting in a more or less glassy mass, a condition of affairs our most expert makers of porcelain have striven for years to avoid, even since the earliest days, when a sort of Wedgewood ware was accepted as an apology for tooth restoration.

Porcelain operators strongly advocating the use of the low fusing body for inlays base their plea principally upon the fact that they are enabled to utilize gold foil for a matrix, claiming it may be adapted to the walls of the most difficult and inaccessible cavities, where platinum foil would be prohibited because of its harshness and liability to split beyond all usefulness under manipulation.

*Read before the Odontographic Society of Chicago.

Now, I unhesitatingly venture the assertion that platinum can be forced (not necessarily burnished) into the deepest, well-like cavities imaginable without a single break. But admitting such a contingency, it would be no detriment to the finished work, as either Brewster's or Close's porcelain bodies (the two I am most familiar with) will nicely bridge over an extensive tear. Mr. Brewster, I believe, deserves especial credit for his comprehensive understanding of our requirements. The slight stiffness possessed by platinum permits of more strenuous handling and obviates the need of investment.

With platinum accepted as a foundation for the porcelain body, I see no reason for hesitancy in choosing between the two classes offered, when we understand the qualities with which porcelain must be endowed to qualify for our consideration.

Ash, Whitely, S. S. White, Consolidated, Close and Brewster manufacture the principal high fusing porcelains now on the market.

These porcelains range from one to twenty-five shades and are divided into foundation and enamel bodies, excepting Close, which is a one color and one body porcelain.

The foundation bisques in one to two minutes, and the enamel fuses to a complete gloss in one to one and a half minutes, after the melting point of pure gold.

Porcelain, to pass our requirements, should possess the greatest possible strength, both edge and en masse. There should be hardness with a minimum degree of brittleness and no loss of density or tendency to become porous and grow spherical after repeated firings. After completion we should be enabled to grind and polish to a perfect surface if necessary.

The true color should be maintained throughout each and every baking. With a correctly laid color scheme our pigments should, after firing, result in an inlay that has but a small amount of translucency. Many of our most beautiful inlays become a hopeless spot of gloom after setting, because of the fading of the basal color, permitting the rays of light to pass entirely through the porcelain. The pigments employed in the higher fusing bodies are less liable to do this than those in the lower fusing.

Unless it is proven more conclusively than at present that the use of low fusing bodies is more advantageous, we should be doing an injustice to ourselves and patients to employ them, for except perhaps a doubtful saving in time, I believe every proper characteristic attributed to the lower fusing bodies is possessed in a greater degree by the high fusing porcelains.

THE ADVANTAGES OF HIGH OVER LOW FUSING PORCELAIN.*

BY MR. ROBERT BREWSTER, CHICAGO, ILL.

Mr. President, Ladies and Gentlemen: The title of this paper, "The Advantages of High Over Low Fusing Porcelain," would indicate that the writer had a preference for high fusing porcelain. A preference for any given material should, however, be founded upon scientific data and not upon mere choice. It not infrequently happens that one hears strong advocacy for low fusing porcelain from men who have never used a high fusing material; on the other hand, those who condemn the use of low fusing materials have *usually* had experience in both.

Porcelain is destined to become a permanent part of dental practice. It is, therefore, very desirable that a correct idea should prevail with regard to its properties. The younger men entering the profession, who are led to adopt a porcelain which by the very nature of its compound will not fully meet the requirements of all the varieties of work which they may be called upon to perform, must, when the necessity arises, do one of two things—either use what they have on hand and maybe endanger the *strength, quality and permanency* of their work (with ultimate injury to their reputation), or must make a second outlay of money, which might have been avoided by sounder advice in the first instance.

The requisites of dental porcelain may be summarized as follows:

Strength, that it may be applied with safety in any position in the mouth.

Density, that it may be ground and *absolutely polished* to present that smooth, dense, unabsorbent surface which experience has shown to be more congenial to the tissues than any other material.

Stability of form. It must possess the quality of retaining fine carved out lines under a high fire, or, as the potters call it, a "hard" fire.

Color. The shades of color to harmonize with natural teeth must be present in the porcelain, in addition to strength, density and stability of form. The color question is one of the most important with which the dentist has to deal. The beautiful results in inlay work which we frequently see, can only be produced with a porcelain

*Read before the Odontographic Society of Chicago, April 21, 1902.

which is so prepared that its shades are absolutely natural tints, and not primary colors. The only place for primary colors in porcelain work is where they can be used as paints, required occasionally to intensify, or modify, or to represent superficial stains or deposits.

Probably the most fascinating and, at the same time, educating portion of porcelain prosthesis will be found in the employment of high fusing oil paints. The eye will become more discriminating and more readily able to detect natural from unnatural shades, the artistic sense of light and shade will become more pronounced, and where there are to-day but a *comparatively* few observers in the profession like Dr. Royce, each year will see that number rapidly increase.

That the first recorded observations upon so important a matter as the actual shades found in natural teeth should have come from Chicago is no surprise! It is but reasonable to expect that the *most* advanced thoughts on this subject *should* emanate from the center of the porcelain world. Chicago has well earned this reputation, the strenuous efforts of its leading porcelain men having placed it in that enviable position.

The first step in the production of dental porcelain is the reduction of the refractory materials, silica, feldspar and kaolin (each with their own peculiar properties) to a condition to receive the metallic oxides or coloring agents. This reduction is made with alkalies, under heat. The extent to which the heat is carried depends upon the use to which the porcelain when made is to be subjected. If we want strength, that is, a high resistance under pressure and percussion, we must be careful to retain the elements of strength, and not have fluxed down our refractory and *very hard materials* below a certain point.

That point, experience and investigation have shown, must not be below the melting point of pure gold, but somewhat higher. On the other hand, it must not be too high, or very undesirable dental porcelain will result.

For ascertaining exact degrees of heat, pyrometers are employed. In the higher branches of chemistry, as you are aware, electrical pyrometers are used. In the production of porcelain, metal pyrometers are usually employed, the standard of measure being pure gold. With this is alloyed platina in quantities varying from 30 per cent to 80 per cent, for the higher fusing porcelains; with silver, for

those fusing below the melting point of gold, and, for the easy flowing enamels and glazes, silver and copper are alloyed together.

This universal practice of using a test of metal or other material as a standard by which to judge the degree of heat in a muffle or kiln is one that dentists cannot afford to ignore if they wish to produce the best results; particularly so is this necessary when using the small rapid electric furnaces.

All porcelain (I use the word porcelain for convenience, when referring to both low and high fusing materials) has its own fusing point, that is to say, fuses at a degree of heat which develops its best qualities of strength, color and surface.

In the lower fusing materials, those which may be fused with a blowpipe, for instance, it is possible to judge the heat with some degree of accuracy by simply observing the material melt, there not being sufficient brightness in the fusing material to cause any inconvenience to the eye. But with porcelain melting above 2,000° Fahr., in a small muffle, it would be very unwise to rely upon the eye alone to judge the correct time for withdrawing the heat, and for that reason I have always recommended the use of a cylinder of gold as a point of time in determining the heat of a muffle.

Large pieces of work, such as a full continuous gum denture, may be lifted out of the furnace and inspected, but small work, which loses its heat quickly by reason of its small bulk, should not be so treated. Porcelain should *never* be subjected to too sudden variations of heat, and the very best results, both for strength, color and translucency, are obtained by leaving the porcelain in the muffle to cool.

One of the disadvantages of low fusing porcelain is its tendency under fire to become spherical. For this reason, and *apart from its lack of the necessary amount of resistance under stress*, it does not appear suitable for extensive restorations or for general use in crown and bridge-work. The greatly increased amount of shrinkage which it exhibits, as compared with high fusing porcelain, is not in itself of so much importance as its tendency to lose its form and destroy the artistic work which may have been expended upon it, and its further objectionable liability in some cases, to absorb secretions and change color.

The past has shown us that there has never been any difficulty in producing a material—having many desirable qualities—to fuse at about 1,600° Fahr., but the requisites for general porcelain work

have never yet, in my experience, been found in a porcelain fusing below $2,200^{\circ}$ Fahr. nor above $2,500^{\circ}$, taking the melting point of pure gold as 2010° Fahr.

For many years I have strongly advocated testing materials in the laboratory. It is some ten or twelve years since I made the first machine for testing the strength of porcelain teeth, and I hold that all materials intended for use in the mouth, where the question of *strength, solidity, expansion or contraction* is VITAL, should be submitted to rigid laboratory tests. Such tests, if scientifically conducted, supply the only *positive knowledge* obtainable.

Tests in the mouth are seldom reliable *in the matter of porcelain*, owing to the difference in bulk of material used—strength of the metal work supporting it—position in the mouth—nature of the occlusion—temperament of the patient, and so forth.

To ascertain for my own satisfaction the relative strength of the different porcelains, I made the following tests:

I believe, deserves especial credit for his comprehensive understanding

I selected a tooth mold used for making long pin plate teeth, and to ensure each test being identical, one space only in the mold was used, so that each tooth, when made, was exactly the same size in every direction. The platina pins were made from the same coil of wire, and in the same machine.

The teeth were then carefully dried and laid in the furnace and baked, each tooth being baked at its proper heat, which had previously been ascertained by pyrometer tests of the material in the same furnace.

The method of testing adopted in this case is, I believe, very reliable, *as a comparative test*. My experience in testing various makes of teeth over several years is that each make has its own breaking point, and the average of each is maintained year after year.

It may be well to state here that some of the tests showed that porcelain which fused at about $2,200^{\circ}$ Fahr. had greater strength than the regular porcelain teeth which fuse at about $2,780^{\circ}$. This was not the case, however, with porcelain which fused below $1,900^{\circ}$ Fahr.

It is not my intention nor desire, however, to draw any comparisons as between the several makes of porcelain on the market to the detriment of any of the manufacturers. I would say this, however, that if it should at any time be deemed desirable to form a commit-

tee of this, or the Chicago Dental Society, for the purpose of investigating the subject of porcelain with a view to the publication of reliable data, I shall be happy to afford the committee all necessary information in my power, and place what facilities I have at their disposal.

In the interest of science, and the dental profession at large, it is most desirable that the *best* in any material should be known.

THE DEVELOPMENT OF THE DENTAL FOLLICLE.*

BY DR. W. W. MUNGEN, FORT WAYNE, INDIANA.

The object of this paper is not an attempt to disclose any discoveries made by myself, for I have not made any, but simply to state my understanding of the development of the dental follicle, from conclusions drawn from different writers on the subject.

Dr. Chapin A. Harris in 1858 said: "Of all the operations of the animal economy, none are more curious or interesting than that which is concerned in the production of the teeth. In obedience to certain developmental laws established by an all-wise Creator, it is carried on from about the sixth week of fetal life with the nicest and most wonderful regularity until completed, but so secretly conducted, as to prevent the closest scrutiny from detecting with precision the manner in which it is effected; enough, however, is ascertained from its progressive results to excite in the mind of the physiologist the highest admiration."

I heartily agree with the doctor as to the curious and interesting phases of the development of the teeth. There is no part of the study of dentistry quite as interesting to me as the development of the dental follicle, but comparatively few dentists take much interest in this branch of study. To my mind this process is the most intricate and unique of the human anatomy, barring possibly the force controlling the heart's action and the formation of the fetus itself. It may be interesting to know that very little was understood of the formation of the dental follicle until and during Dr. Harris' time. It seems that the investigators did not begin observation early enough in fetal life to determine the true starting point of the tooth until Dr. Goodsir traced the growing process of the teeth from germs, as he called them.

*Read before the Indiana State Dental Association, June, 1902.

Suffice to say that it remained for two Frenchmen, Magitot and Legro, about the year 1860, to correct theories in regard to the development of the dental follicle. There have been other works published on this subject since Magitot and Legro published the results of their labor, but the differences of opinion are so slight that I think I am safe in taking for my authority the above-named Frenchmen. Therefore, gentlemen, if I do not handle the subject intelligently it is because I can read very little French and talk it less. Last, but not least, I listened to Dr. Craven lecture on this same subject some twelve or thirteen years ago.

The face of the fetus, at seven or eight weeks, is merely an irregular opening, but at the fifth week the burgeons of the intermaxilla and maxillary bones make their appearance and join together about the forty-fifth day. At nearly the same time the epithelial or dental ridge makes its appearance. The teeth, as we all know, are developed in the mucous membrane, which consists of three coats. The basement membrane occupies the middle, while the part beneath is called the dermis and the part above is called the epidermis.

I will state that the basement membrane is structureless and the epidermis, which is of most interest to us, consists of five layers of cells—the corneous or dead cells, the biscuit, polygonal, Heckel and columnar cells. All between the basement membrane and the corneous layer of cells is called the Malpighian strata, and in this strata of the mucous membrane is the beginning of the tooth.

In the lower jaw just beneath the epithelial ridge or tooth-band, as it is termed by some writers, is found Meckel's cartilage, which later develops into the jaw bone proper. Some authorities, however, believe that the cartilage disappears by absorption. The epithelial ridge is formed about the seventh week by an extraordinary development of the polygonal cells, while at the same time the columnar cells slip down or are depressed, forming the epithelial band. This gradually deepens, being followed by the prominence of the ridge until a fold is assumed and the ridge falls in, forming a depression called the primitive groove. The fold extends out and forms the epithelial lamina.

Later ten little pimples make their appearance on the extremity of the lamina. These pimples are called papilla and correspond to the ten temporary teeth. The papillæ are the germs of the enamel organs of these teeth. The papillæ grow larger, assuming a bottle

shape and keep descending until the bottom begins to be depressed toward the center, which results in a concavity in its lower extremity.

The growth of the papillæ has been divided into four stages: First, the papillary stage; second, the bottle; third, the decanter; fourth, the decanter with a concave bottom. During the four stages of growth the papillæ are still connected with the epithelial lamina by a cord called the epithelial cord. This cord is afterward broken up and dissipated. The basement membrane follows all the convolutions of the columnar epithelium, which envelopes the enamel organ in all its stages.

The derma pushes itself up into the concavity in the bottom of the enamel organ and becomes the dentine organ or papilla. The reciprocal adaptation of the two organs, which takes place from the first appearance of the dental papillæ, continues throughout all their subsequent phases, the enamel organ always covering the dentine organ and exactly fitting its contours, whatever may be the shape. No connection of tissue, however, exists between the two organs at any stage of development. The dentine organ simply pushes its way up into the enamel organ, assuming the shape of the tooth which is to follow.

I want to say at this point that the papillæ do not extend to the ends of the jaw, but leave a space where, after the formation of the enamel organs of the temporary teeth, two other papillæ make their appearance, one on either side, for the development of the first molars. These papillæ make their appearance about the sixteenth week. After the dentine papilla has assumed the form of the tooth it is then called the dentine organ. About this time the epithelial cord begins to break or disintegrate and the enamel organ becomes a closed sac. The space inside the sac is called the reticulum and is filled with stellated bodies. These bodies are differentiated polygonal cells, being nucleated and having from one to three nuclei. Dr. Sudduth says the stellated reticulum also contains enamel salts and is the storehouse of all enamel growth. The outer wall of the enamel organ or follicle is tough and is composed of alveolar fibrous tissue. The inner or papillary layer lies between the outer wall and the enamel organ proper, is of a grayish color and of a jelly-like consistency.

About this time a little cap of dentine makes its appearance at the top of the dentine organ. It constantly develops downward

and inward, forming the shape of the tooth. The enamel immediately begins to develop outward from the same point. Before the appearance of the dentine cap small bodies, called odontoblasts, are seen on the surface of the dentine papilla. These are the organs that develop the dentine. They give off hair-like processes from the upper surface called the "soft fibers of Tomes," around which the dentine is found, thus leaving a circular canal, which later becomes the dental tubuli.

We must remember that the dentine formation, or ossification, if you please, does not overtake the odontoblasts toward the center until the dentine has become the desired thickness, the tubes lengthening out as the odontoblasts recede, and then they form the pulp of the tooth. As they recede they merge together, as they cannot all be accommodated singly in the pulp cavity. The first function of the "soft fibers of Tomes" is to form a tube, being used as a mandril around which the dentine is formed.

As I have already said, the polygonal cells, above the basement membrane, become the stellated bodies, and the columnar cells now become the ameloblasts (enamel blasts), which are the organs that develop enamel. They are regular hexagonal prisms and remain so after they are formed into enamel. The layer of membrane surrounding an enamel rod is called the enamel reticulum.

The epithelial cord has several buds formed around it, and about the time of the closing of the sac, or just before the dissipation of the cord itself, a bud is thrown off from the lower end of the cord, forming the burgeon of the succeeding permanent tooth.

The burgeons of the anterior ten teeth only are formed this way. The burgeons for the permanent teeth are identical with those of the temporary teeth; that is, it is composed of columnar epithelium, covered with basement cells and enclosing polygonal cells, which later become stellated bodies. The parent cord is severed from the deciduous tooth and broken up and the pieces are found floating around in the embryonal tissue. Sometimes a bud or burgeon will become detached from the cord, and floating off into the tissue will form a supernumerary tooth.

The basement membrane between the enamel and dentine organ becomes calcified and forms an animal or bony cement between the enamel and dentine. The enamel grows outward and the dental follicle contracts and the stellated bodies and liquid albumen are forced down around and takes the form of the tooth.

If there is any excess of tissue above what is needed it is resorbed. The outer tunic lies immediately on the enamel. The basement membrane now forms the enamel cuticle, which soon wears off. The development of the alveolar process begins in the outer wall of the dental follicle, which is made up of alveolar fibrous tissue.

The inner or papillary wall of the follicle takes on vascularity by the slightest pressure, and as the crown is pushed up by the root developing downward, it naturally causes extra pressure on this vascular wall, which finally leaves the side of the enamel organ and becomes a vascular cushion over the crown, which has the property of resorbing any substance excepting enamel. It is now known as the organ of resorption and is the pioneer in the process of eruption, leading the way by absorbing the alveolus, gum tissue, root of deciduous teeth and such substance as may bar the way, leaving a clear path for the tooth beneath. It secretes liquor sanguinis, which it throws off in great quantities, and dissolves all tissues that stand in the way of the tooth.

The basement membrane is developed downward along with the lengthening of the root, the dentine forming on the inside and the cementum on the outside of it. There are three stages in the development of cementum.

The primary cementum is the first lamina formed and its function is purely a physiological one, to establish vital relations between the finest and densest tissue of the body, the dentine and the alveolus, acting as an intermediate tissue.

After the first lamina of cementum is formed the secondary commences to form and is added on layer by layer. Its function is purely a mechanical one, to lift the tooth into occlusion, and lamina are added until perfect occlusion is secured, besides rounding off the ends of the roots so they may bear the force of mastication without occasioning pain or soreness. It also acts as an intermediate tissue between the dentine and the pericementum, but this would be established by the primary cementum without the aid of the secondary.

There is persistent blastema beneath the pericementum which will develop cementum whenever the conditions will admit of it; that is, when the pressure of the pericementum is relieved it will develop and force the tooth down from the socket.

This is the third stage and is called exostosis or exostocementum. Each lamina of cementum contains numerous lacunæ or lakes, connected with canaliculi, which also connect with the tubuli of the dentine.

The functions of the syrupy filaments in the dentine are, first, to act as a mandril around which the dentine is built. Second, to obtain a normal equilibrium of the dentine. Third, to act as nerves and vessels by transferring sensation and moisture. The cementum passes under the enamel following the basement membrane.

In 1858 Magitot claimed to have found within the dental follicle of a developing tooth a special organ for the development of the cementum. With the exception of this author, no authority has recognized the presence of this special organ. The second molar obtains its cord from the cord of the first molar, just above the sac. The third molar from the second, but occasionally from the gum in the neighborhood of the first molar. If the cord is formed from the cord of the second molar it will be of the same type, but if derived from the gum it may be of any type. That is, it may have a single root and cusp, or several.

DISCUSSION.

DR. GEO. E. HUNT:

This paper is an excellent, brief and simple exposition of the subject. It is to be regretted that more of our profession have not the spirit of investigation that will lead them to follow out this line. There are also many subjects in histological and pathological lines in which good work is needed.

It is a pleasure to find an Indiana dentist pursuing this study, even under others. It is to be hoped he will undertake original work in this line soon.

Many American dentists have done good work in oral embryology. The names of Broomell, Burchard of Philadelphia, Hart of San Francisco, Andrews of Massachusetts, Sudduth of Minnesota and a host of lesser lights will ever be remembered with respect by our profession.

It is practically unnecessary to discuss the paper, as the author has left little unsaid and has followed accepted teachings very closely.

The essayist speaks of separate parts of mucous membrane being known as the basement membrane, dermis and epidermis.

Those terms are applicable to the skin and its underlying tissue, but recent histologists have discarded them when speaking of mucous membrane and have divided it into the epithelial layer, composed of thick, stratified columnar cells, corresponding to the epiderm; the tunica propuaia, a rather dense network of interlacing connective tissue, fibers and some yellow elastic, in which layer the various papillæ have their origin, and which corresponds to the dermis; and the submucosa, in which mucous glands are located, consisting of loose textured connective tissue, fibers and some muscular and fat tissue, corresponding to basement membrane.

The enamel organ is formed from the outer or epithelial layer in the way described by the essayist. The essayist mentions four stages as the papillary, bottle, decanter and decanter with concave bottom. That shows the trend of the Fort Wayne mind. In Indianapolis we speak of the organ as bell-shaped.

The essayist does not tell us where the papillæ for the permanent first molars come from. It is a question of dispute. They may come from the papillæ forming in tooth band as the deciduous papillæ do, and extending back, or form an independent cord, as do the second and third molars.

PROCEEDINGS OF SOCIETIES.

THE AMERICAN DENTAL SOCIETY OF EUROPE, HELD AT STOCKHOLM, SWEDEN, AUGUST 13 TO 16, 1902. GENERAL MEETING.

THE PRESIDENT:

Gentlemen—I am not going to inflict a speech upon you, but I cannot refrain from expressing for the Society our great pride and pleasure in having so many visitors on this occasion. We wish to thank you for the trouble you have taken to meet with us, and we hope that you will feel you have not altogether come in vain. I wish you to consider yourselves for the time as members of our Society, taking your part in the discussions and proceedings.

DR. CHRISTIENSON:

Mr. President and Gentlemen—On behalf of the members of the Swedish Dental Society I am very happy at seeing you here at our annual meeting, and I give you a hearty welcome to Stockholm.

We thank you for your kindness in agreeing to hold your meeting at the time we hold ours, and for the kind invitation you have given us to attend your meetings and take part in your discussions and demonstrations. Gentlemen, I again bid you welcome.

THE PRESIDENT:

You have heard the very kind welcome which our friend, Dr. Christenson, has presented, and I am sure I am speaking for you collectively when I tender Dr. Christenson our most sincere thanks. This is not our first knowledge of Sweden or Stockholm, although with many of us it is our first visit. We feel much related to Sweden. There are some names which are world-wide names, and we claim relationship to one of these. When I first came here I saw a statue which impressed me greatly, a statue erected to John Ericsson. John Ericsson was a Swede, but he was a man that belonged to the world, and we, with the Swedes, claim honor for John Ericsson, and are pleased to do him honor. Nothing appears on the statue but the words "John Ecrisson"—we all know the story. On behalf of the Society I most heartily thank Dr. Christenson for his remarks.

Dr. Förberg announced the various arrangements made for extending hospitality to the Society.

On motion of the Secretary, seconded by Dr. Jenkins, a hearty vote of thanks was extended to the Tourist Club of Sweden for the interest they had taken in the meeting and the hospitality shown to the Society.

On motion of the Honorary Treasurer, seconded by Dr. Aguilar, a hearty vote of thanks was also accorded to the Stora Sällskapet for the hospitality and entertainment extended to the Society.

On motion from the Chair, a vote of thanks was also accorded to the American Dental Club of Stockholm and to the Swedish Dental Society.

The President's address was then read, and subsequently a committee was appointed to consider the address. This committee brought in the following report:

Grand Hotel, Stockholm.

To the Members of the Dental Society of Europe.

Mr. President and Gentlemen: Your committee, appointed to take into consideration the address of the President, respectfully reports, that it is the opinion of the committee that the Society should be deeply grateful to the President for such a masterful and scien-

tific elucidation and elaboration of the subject, and, furthermore, in order that some definite progress may grow out of the suggestions, we respectfully recommend that a committee of the members of the American Dental Society of Europe be appointed by the Chair, who shall formulate or suggest a curriculum for preparatory schools, which may serve as a basis for an ideal course of instruction for those contemplating the study of dentistry. Your committee feel that the paper should have strong claims upon the attention of dental instructors in particular and the profession in general, in helping to formulate upon physiological and common sense lines the future curricula of our dental institutions, and everything which goes toward the enlightenment and upbuilding of our profession.

Your committee respectfully recommend the advisability of a free exchange of ideas by correspondence, or otherwise, between the author of the paper and dental instructors, with the view of promoting a definite and concerted régime based upon the principles enunciated.

(Signed)

B. HOLLY SMITH,
TRUMAN W. BROPHY,
W. C. BARRETT,
L. C. BRYAN,
E. LAWLEY YORK.

The discussion was then taken upon the President's address.

DR. GODON :

I have greatly appreciated the address of President Royce, and I ask that it may be sent to the International Dental Federation as well as to my school in order that it may be considered. The subject of preliminary education is one of the three questions especially to be considered by the Federation, and the address would properly fall into that consideration.

DR. BARRETT :

The subject covers so much ground that it is absolutely impossible to discuss it in a manner which shall be commensurate with its merits. It considers all the highest interests of man, and I am very glad indeed that it was my privilege to listen to such a paper. I shall take it home with me and absorb its thoughts. I cannot digest them at once. Such papers form an era in our lives from which we begin to date our years of intelligence. We live not in years but in thoughts. A paper like this gives us something upon which to think, and eventually to assimilate into our natures, and to make of us

better men, better teachers, better citizens, better sons, and better in every relation of life. I wish I could take up some of the thoughts and discuss them here, but time is limited. I desire most heartily to commend my friend for his paper and for the thoughts which he has given me, and to say that I am under an obligation to him which I can never hope to repay, but which I will do my best to repay in some way by endeavoring to present his thoughts to others when I get home.

DR. YOUNGER:

I have had the honor of visiting the Ecole Dentaire of Paris on several occasions and of seeing the work that is being done in its various departments, and I have been very much pleased with it. In its curriculum, its equipment, its detail of work, its teaching, and in the intelligence and appearance of the students the school compares favorably with the best of our American schools. I am very glad to be able to say this if only in acknowledgment of the courtesy I have received from the faculty and from the French profession in general.

DR. GODON:

I would thank Dr. Younger for his great appreciation of our school. Since its foundation in Paris twenty years ago we have done what we possibly could to raise the standard of our teaching, and nothing could be more flattering than to receive the approbation of your Society, because we know that in the teaching of dentistry Americans are the most competent. It was on American teaching that we established the first dental school. We have followed the progress made by you in your teaching and when we know what is being done in your schools we introduce it into our own.

DR. BOGUE:

I follow Dr. Younger in my appreciation of the dental school of Paris. The effort that Professor Godon and his able confrères have made within the last three or four years to approximate to the standard of teaching in America is something marvelous.

DR. BROPHY:

I wish to state that the schools of America have adopted the four years' course which will come into operation next year, and I find that some of the schools of Europe now have a four years' course. With this extension of time we shall be able to train young men to do the various things in a far better way than has ever been done before. It is impossible in the short period of three years to

train men to do this kind of work in a manner satisfactory to ourselves and satisfactory to the public. With the four years' term every man will be trained to do the technique and the delicate manipulations necessary to become a skilled practitioner. I am very glad we are having concerted action on the part of the schools of different nations so that in years to come there will be no differences.

Dr. W. E. Royce then moved "That the next International Dental Congress be held in St. Louis in 1904."

Dr. Griswold seconded the motion.

DR. BROPHY:

A few of us were appointed to bring to the commission having charge of the creation of the Fourth International Dental Congress invitations from the National Dental Association, the National Association of Dental College Faculties, the National Association of Dental Examiners, the Governor of the State of Missouri, the Mayor of the City of St. Louis and the officers of the various dental societies of the State of Missouri an invitation to this commission to hold the Fourth International Dental Congress in the City of St. Louis in the month of August, 1904, during the International Exposition. Arrangements have been made and other professions have already organized congresses in medicine, chemistry and so on, and our friends in America are awaiting the action of the commission appointed at the International Congress in Paris, whose duty it will be to locate the next congress. I assure you that it will be a very great satisfaction and pleasure to the dental profession of America if the City of St. Louis is selected as the place for the next International Dental Congress. If you decide to come we will do all in our power to assist you and all we can to make the congress memorable in the history of the dental profession.

DR. BARRETT:

As one of the commission which was appointed to extend the invitation to meet in St. Louis in 1904, I assure you that the wish is in every heart in America that this meeting shall be held at that time. Every professional man in America stands ready to welcome you and will put forth his utmost efforts to make your visit pleasurable and comfortable and a memorable one.

The resolution was carried unanimously.

Discussion of Dr. A. Jessel's paper on "Carbonized Cotton and Its Various Uses in Dental Practice."

THE PRESIDENT:

Dr. Jessel has presented a subject which I think is new to a good many of us.

DR. FÖRBERG:

My experience goes back to 1887, when I began to use the carbonized cotton. I had up to that time tried almost every preparation, but I gave everything up and took to carbonized cotton for root fillings. The preparation may be used also for a great many other purposes with success. I had several cases that had been treated by other dentists for months without success, but when I began with the carbonized cotton and sulphuric acid treatment a cure was brought about in a very short time.

DR. FORSLAND KJAER (Copenhagen):

For some years I used graphite powder for filling root canals. I mixed it with thymol and obtained very good results. But I think the carbonized cotton is better.

DR. E. LAWLEY YORK:

The practice of filling root canals with cotton that has been saturated with antiseptic is very prevalent in Germany, and many of the best men now fill the root canals with cotton previously steeped in antiseptics, and leave it as a permanent filling. I took a number of teeth and treated the root canals, and I found when I took the cotton out that it was sterile. It had been soaked in antiseptics previously. I filled the canals with cotton steeped in all the essential oils, carbolic acid, creosote and such preparations, sealed them in the teeth and buried the teeth up to their necks in agar and placed them in an incubator. The top portion of the crown of the teeth was left exposed and filled with bread, water and all materials found in the mouth. I kept the teeth thus for six months, and at the end of six months I split the roots and extracted the cotton with sterile forceps and cut the cotton in half. One portion I put in a dish of sterile agar and the other portion into a dish containing an infected agar. I put it into infected agar so that if there was any antiseptic left there would be a zone round the cotton in which there would be no organisms. In every case I found the cotton would produce a growth of microorganisms, and there was not one cotton which was sterile out of the hundred experiments I performed. That led me to believe that an antiseptic left in the root canal would pass away, and although you may not get any trouble from it, you are at

any moment liable to. Those who use carbonized cotton say that if any trouble occurs it is easy to remove the cotton, but it seems to me you are making trouble for yourself. I give you the results of the experiments for what they are worth. I did not try carbonized cotton, and I did not use charcoal or any of the carbon preparations.

DR. FÖRBERG:

I think what Dr. York has said is a case for carbonized cotton, because it has not the properties of the common cotton. I think a trial with carbonized cotton would show a better state of things than resulted from the experiments he has just mentioned.

DR. JESSEL:

What I tried to bring out in my paper was that you must try and have an aseptic filling and not depend so much on antiseptics. Antiseptics are very apt to be absorbed. If we have an aseptic filling in the first place the canals can be much better treated antiseptically. The reason why carbonized cotton is far better than the ordinary cotton is that we can force it into places where we cannot force the ordinary cotton, and there is the additional advantage that it is an absorbent of gases and fluids. I have used the cotton with chloride of zinc, the method which is given in the text books, but after I once used carbonized cotton I gave up everything else and continued with it, as I found it superior to cotton and antiseptic methods.

DR. J. W. WASSALL:

I can imagine two uses to which I should be very glad to put the carbonized cotton as soon as I return to practice. We have all used ordinary cotton for making a dressing in septic teeth, and as a rule the cotton is taken out by septic fingers on a broach which may be aseptic, but which is rolled in the fingers, and the cotton saturated with the dressing and put in the canal. I believe carbonized cotton is something which will hereafter take the place of that, because we can take a broach, put the carbonized cotton on the broach and sterilize it in a flame.

DR. JESSEL:

You do not touch the carbonized cotton with your fingers at all, and it cannot be wound on a broach. It is charred and retains its fiber, but naturally in a finely powdered state, and it would crumble. Alcohol prevents that crumbling.

DR. J. W. WASSALL:

I was in hopes that it could be used as a fiber, twisted on an iridio-platinum broach, and sterilized in the flame of the Bunsen burner, dipped in a medicament and passed into the canal. Another use to which it might be put is to incorporate it with chloro-percha as a filling. If the material can be worked through a dry canal it can also be used in a canal when moistened or saturated with chloro-percha, and it seems to me in tortuous canals it would be impossible to pack the material to the very end.

DR. W. MITCHELL:

I understood that in the introduction of this carbonized cotton into pulp canals it was first annealed, and I should like to know how that is accomplished. A point has occurred to me in regard to canals having large openings; if great care was used in the introduction of this material it might not cause any inconvenience at all, even though considerable portions of it went through the apex. Of course, there would be a difference in the sensibilities of the tissues. We have all had experience of patients who years ago used charcoal for cleaning the teeth, and that charcoal remains in the gums and will probably remain as long as they live. The other day I saw a patient who had used charcoal thirty years ago, and the convolutions of the gum were as finely marked with charcoal to-day as at the time she used it. It is innocuous and not resented by the tissues. I imagine that under like conditions carbonized cotton would be retained as quietly and comfortably as the charcoal. I should like to know how the annealing of this carbonized cotton is performed.

DR. BÖDECKER:—

I will take an opportunity of trying some experiments with the material, and if you will permit me I will relate some experiments that we made in New York some twenty years ago, when I was chairman of the clinic of the Dental Society of New York. Dr. Marshall Webb at that time gave a clinic, and we had a patient with a tooth that had been filled some eight or ten years previously with amalgam. We removed the amalgam filling, and under it we found a canal filling of cotton. The tooth was an upper bicuspid, a single-rooted tooth. The canal was in a perfect condition, the cotton was not removed, and as far as visual power went, everything was in an absolutely aseptic condition. It was said that it would be a good

thing to try experiments. At that time gutta-percha filling for canals was being very largely used. I told Dr. Webb that I had a patient who had several roots in the mouth that were to be extracted and we would make some experiments. Dr. Webb came to my house and we drilled the teeth out and washed them with absolute alcohol and dried everything thoroughly. Then we took some chloro-percha and introduced it into the canal, and afterward some gutta-percha was pressed in as tight as possible. That was done in three lower bicuspid roots. The first roots we then removed and made ground sections from them and put them under the microscope. We could not only see that the canals were perfectly filled, but to a certain extent we could follow out in some canals the red chloro-percha in its course through the root. I have since used chloro-percha for root canal fillings, and when I have been able to get into the canals and fill them thoroughly I have never seen a tooth that has given trouble in the filling.

DR. BROPHY:

I have a great admiration for the man who has the courage to present a paper advocating the use of a new material or one that has not been generally known in our profession. What object do we seek to obtain in the filling of a root canal, and what is the condition that confronts us? It has been assumed that we have here a septic material to deal with, and the inference drawn from the paper is that by the introduction of carbonized cotton this septic material will be taken care of. The essayist, if I understood him correctly, said that in the event of it being necessary to remove this material it is easily removed, and I would close that phase of the subject by stating that any root canal that has been well and perfectly filled need never have the filling removed. In other words, a root canal once well filled should remain. In the second place, what is the condition which confronts us? If we make a root canal aseptic we have no occasion to introduce a filling that is capable of producing an aseptic condition. We sterilize the canal, and then we want to introduce something which will prevent further infection. If we desire to introduce something to prevent the formation of gases or stop the odor that comes from the canal from time to time, we must first rid the tooth of that, and then if we have the canal in a perfect condition we want to introduce something which will hermetically seal the canal and prevent the ingress of moisture or anything that

would cause sepsis. If we have sepsis beyond the root canal we must get rid of that before the root canal is filled, or make an opening, through which this septic material may be removed through the alveolar plate. If we do that we can make use of remedies by way of the artificial opening. The canal can be filled with gutta-percha, which, in my opinion, is the most desirable material because it will not absorb moisture. If the canal is made antiseptic and filled with gutta-percha it will remain, provided the filling is well inserted. We may have a condition of things beyond the end of the root due to sepsis, obstruction of the pericementum, osteitis, a careous condition of the bones or other complications, and it is necessary to have an opening made through the external or internal alveolar plate to permit the results of decomposition to find their way from the canal. It must be let out somewhere. So long as we have this material at the end of the root it will seek a passage through the canal. It occurs to me that the introduction of materials into the canal would not be the most satisfactory way of treating this complication; it would be better to get at the seat of the trouble directly, through this process, and treat it in that way.

DR. W. C. BARRETT:

There is an old saying that the man who acts on the principle of let well enough alone will make no progress. I have been well satisfied with gutta-percha as a filling for root canals, but if there is a new material offered which gives any prospect of an improvement, I say "God bless the man that gave it to me," and I will try it and test its merits. Any new weapon added to our armament strengthens us for the battles we have to fight. The wheat field is not the result of the plough, it is the result of the seeding. The harvest comes not because the surface of the earth has been scarified, but because the seed has been placed within the ground in such a way that it may germinate. So in our practice every new thought, every new method which has within it the seeds of fruition for good should be welcome, and we should in every way endeavor to cultivate it. I think Professor Brophy did not comprehend what Dr. Jessel said. Dr. Jessel did not advocate this material because it could be easily removed, but said that the ordinary sterilized cotton had been recommended because it was easily removable.

DR. JESSEL:

I followed others in that respect, who advocate that the filling should be removed in cases where it becomes necessary.

DR. W. C. BARRETT:

I understand that this material may be used very much in the same way that gutta-percha filling is used, and I can readily comprehend that the carbonized material may present certain advantages over other things. I wish simply to impress upon every one present that which is deeply ingrained in my own consciousness as the result of many years of experience, that we do not want lightly to exclude anything on the ground of "let well enough alone."

DR. N. S. JENKINS:

Yesterday Dr. Jessel was so good as to explain to me the use of carbonized cotton, and I understand the great advantages it may possess, especially in the treatment of gangrenous pulp, etc. A certain portion is taken up on the wires, passed through the flame, which does not consume it, and laid upon a slab. The material which is used for disinfecting purposes is then united with it and is carried into the cavity. The material is so fine that it can be passed to the apex of the root, and for antiseptic purposes I should say *a priori* that it is something for which we must be extremely grateful. I have listened with great interest to Dr. Bödecker's remarks with regard to his experiments in the use of cotton for filling roots. There is nothing that is so convincing to practical dentists as filling materials, and long years ago I came to the conclusion that there could be no more pernicious material for the filling of roots than cotton, however well it might be saturated with antiseptics. Accordingly I began a series of experiments with oxychloride of zinc, as being presumably the most manageable and least objectionable material. After an experience of nearly thirty years I am able to assert that a root canal, whatever its original condition may have been, which has been brought into a healthy condition, and perfectly filled with oxychloride of zinc, retains its color and its health and is absolutely destitute of the faintest odor if you cut it out again twenty-five years afterward. That I cannot say of any gutta-percha filling I have ever seen in the course of all these years. Again and again it happens to us who practice abroad to have a patient come to us with teeth which have been filled with chloro-percha, and I myself have never seen one single instance of one of those teeth on which it was safe to put a crown. Every time I have found them giving forth an odor, and have refrained, after one or two unhappy experiences, from putting a crown on such a root. But one may

take a tooth filled with oxychloride of zinc and put on a crown with the certainty that there will be no unhappy results.

DR. E. A. BOGUE:

I have pleasure in confirming what Dr. Jenkins has just said, and I thank Dr. Jessel for the paper he has given us this morning. With regard to chloro-percha root filling, I have had very much the same experience as Dr. Jenkins, and such gentlemen as he are dangerous fellows for us American practitioners to encounter. We see many patients from American hands, and it is my universal experience that oxychloride of zinc is the most accurate thing for filling. It is odorless, and when the roots have been made perfectly healthy oxychloride of zinc can be inserted with advantage. The fillings do not require taking out.

DR. E. LAWLEY YORK asked Dr. Jessel if he had used carbonized charcoal points.

DR. JESSEL:

I have not.

DR. E. LAWLEY YORK:

Would it not be a better material than carbonized cotton? With regard to the case cited of a bicuspid root canal in which there was no odor, that is no criterion, because the pus would pass behind and go through the apex. If the apex were closed it would not much matter whether you filled it with carbon or charcoal, or left the canal open.

DR. BÖDECKER:

I am well aware that if the apex is closed it does not make any difference what you fill the canal with. All canals filled with cotton give trouble, and always have given trouble. Dr. Webb and myself were very much surprised to find one tooth in such an admirable condition, and that is the reason I spoke of it. Up to the time I adopted the method I have spoken of I used oxychloride of zinc exclusively in the canals, and it always gave good results. But when the apical foramen is open to any extent, and the least bit of this material passes through, there will be excruciating pain on account of the chloride of zinc, and that is the reason I gave it up.

THE PRESIDENT:

I have received a very good suggestion, and if it is not objected to I will appoint a committee consisting of Dr. E. Lawley York, Dr. Hayes and Dr. Jessel to make experiments and investigations in

this matter, and report to our Society, or to the world at large upon the material.

DR. BRYAN:

The discussion on this subject is exceedingly interesting, and the material itself appears to be valuable. The only point I would make is, that no substance of that kind can fill a canal hermetically unless there is something like chloride of zinc or gutta-percha combined with it. The carbonized cotton might be combined with chloride of zinc, which would seem to fill the bill and the root.

DR. JESSEL:

My annealing is simply blowing it over a flame. There is no objection to combining carbonized cotton with chloro-percha, or chloride of zinc. It is perfectly inert, and can be combined with anything you like. Its advantage over chloro-percha and other things is that it can be introduced into crooked and tortuous canals. With regard to Dr. Brophy's excellent remarks, I myself have been always very radical in treating these cases. We are only human, and make mistakes, and by using carbonized cotton there is a better chance of removing the filling if necessary. I must bear Dr. Jenkin's remarks out about teeth having been broken off. Although I have been in practice but a little over three years I found I had many cases on my hands. I never put a crown on a tooth which was filled with gutta-percha. I have not used charcoal points, but I do not see why they would be any better than the carbonized cotton. I daresay they are hard.

DR. E. LAWLEY YORK:

Carbonized points are hard. I have tried them, but I did not get good results.

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Schiller Building, April 1, 1902, with the vice-president, Dr. George B. Perry, in the chair.

Dr. T. W. Brophy gave a talk on "Operations for Palatal Defects, Illustrated with the Stereopticon."

DISCUSSION.

DR. C. E. BENTLEY:

There is no necessity of my attempting to discuss this most excellent lecture. I have always been interested in the work Dr.

Brophy has done of this particular character. The profession is indebted to him, and I believe I do no violence to any other oral surgeon when I say that Dr. Brophy occupies an unique position in operations of this kind, and I for one am quite willing to accord him that place of honor. He has told us that Dr. Garretson's picture was an inspiration to him when he looked upon it. I should say to the members of the Chicago Dental Society that the talk Dr. Brophy has given us, and the many interesting things he has said, are a sufficient inspiration to us without my saying anything further.

DR. THOMAS L. GILMER:

A mother has heard the first wail of the infant that she has longed for for months. She has gone through many distressing conditions and passed through severe pains which brought the infant into the world. Have you ever thought how she felt when she was told that her child had a blemish, such as we have seen in the pictures to-night? If a physician says to the mother, Your child does not cry simply because it does not live, it is bearable, because she has not really learned to love it. It seems to me, with the delicate organism of a true woman, when a mother is told that her babe is deformed in lip or palate or both, it must be a terrible shock; and any one who by operation can cure such defects or remedy such blemishes is a great benefactor. Certainly this can be done in many cases, and I am willing to give Dr. Brophy full credit for all he has done in this work.

Dr. Brophy will agree with me that this is not always easy work. It is work which is oftentimes fraught with a great many disappointments. We do not succeed in some cases as we would like, but when we do there comes a feeling of pride to the surgeon which more than compensates him for the difficulty of the operation. I recall an exceedingly difficult case of cleft palate and harelip in my practice. The work was commenced some three years ago, and was finished in the course of time. I had not seen the child for months, until a short time ago, when I found it could speak, laugh, eat and drink just as other children. I could detect no defect in speech. I have photographs and casts of the mouth of that child before the operation, and also since, and the latter are almost perfect. I do not know of anything I have done during my professional career which has given me so much pleasure as hearing this particular child speak plainly as it did.

There is really nothing to criticise in Dr. Brophy's lecture. I hope he will continue to perfect this line.

DR. BROPHY (closing the discussion) :

I have but a word or two to say in conclusion. I have here two photographs, one early and the other recent, of a patient upon whom I operated. These photographs show the form of oral speculum used and how it is retained. The first shows the condition of the palate prior to the operation; the second, the condition of the palate after the sutures have been introduced several days and union is complete.

Here is a young man upon whom I operated, and any one who desires to see the condition of his mouth may do so. The photograph shows the condition his mouth was in prior to the operation. It illustrates and is a parallel in every respect to the one projected on the screen, taken from Dr. Kingsley's book, and for which case he made an obturator.

I have brought along with me this evening the inhaler we use in maintaining anesthesia while operating on the palate.

(Here Dr. Brophy explained the use of the inhaler.)

With this inhaler the operator proceeds from the beginning to the end of an operation without interruption. If he needs to stop to remove the accumulated mucus and blood, anesthesia is maintained. Those who have had considerable experience in making operations requiring an anesthetic will find this inhaler very satisfactory.

Lastly, I wish to thank the gentlemen who have discussed my remarks for their kind words, and to thank the audience for the courtesy and attention they have shown me in the presentation of this subject.

A regular meeting was held May 6, 1902, with the president Dr. Elgin MaWhinney, in the chair.

Dr. E. M. S. Fernandez read a paper entitled "The Manufacture of a Porcelain Crown from Beginning to Finish."

DISCUSSION.

MR. ROBERT BREWSTER :

In the first place, allow me to express my gratification at the honor conferred upon me by your committee in asking me to open the discussion on a paper by so eminent a porcelain worker as Dr. Fernandez.

The experience of the essayist has not been confined to recent observations, it dates back, I believe, some twenty-five years to the days of the old coal furnace, when baking a porcelain case meant staying up all night and possibly into the early hours of the morning. Neither has the experience of Dr. Fernandez been confined to any one porcelain, for I find in visiting his unique laboratory that he has experimented with all the porcelains as they have been brought out from time to time, even to the latest low fusing bodies.

In the interesting paper to which we have listened, and which has been well illustrated by the essayist's own photographs, I need not refer to the preparation of the root except as to the conservative method of allowing sufficient time to elapse between the preparation of the root and the final completion of the crown.

The instrument shown in Fig. 1, for gauging the exact depth for the post, is simple and practical, inasmuch as it prevents any liability to undue pressure coming on the filling at the apex of the root when the crown is finally adjusted.

The shape of the band on the labial aspect appeals to one as being correct, allowing as it does, the facing to lie close to the metal, and at the same time, follow the labial curve.

The slight tapering of the end of the root as shown in the photograph, so that the thin edge of the band binds firmly only when pressed right home, and not before, is an excellent method, as a space is thereby left for cement, and there is less liability to push the cement forward in adjusting the crown, as sometimes happens, when the walls of the root are parallel the full width of the band.

In the crown shown us to-night the pins are bent down and soldered to the cap; in short teeth this is essential, but where a tooth is medium or long, it is advisable to let the post extend above the cap one-quarter or one-third of the total length of the crown, which adds to the strength of the porcelain and removes some of the stress from the pins of the facing. The principle involved is exactly the same in constructing a crown, as it is in a bridge; the metal work must in itself be able to take considerably more than half the stress which the finished case may ultimately have to bear. All metal work to which porcelain is attached should be devoid of spring. There is always danger, however, if the proper limit of metal is exceeded, because excess of metal weakens the whole structure.

The method advocated by the essayist of thoroughly fusing porcelain around the post and pins in the first instance is worthy of

considerable commendation, for at this stage the solidity of the attachment may be observed, and also for the reason that the porcelain, when thoroughly fused and rendered solid around the metal post and pins, should not be disturbed by any future bakings that may be necessary in the building up of the crown. The essayist, therefore, builds up with a slightly lower fusing porcelain, and shades, carves, and contours as the case requires, the final bakings having no disturbing effect upon the foundation work.

There is one other point I would like to refer to, and that is as to cleanliness in connection with porcelain work. If I understood the essayist rightly, he has devised or adopted a special set of tools and instruments, and even a corundum wheel which he uses exclusively for porcelain work. I was glad to notice that this latter was corundum, and not carborundum.

DR. J. W. WASSALL:

I would like to ask the essayist to answer this question in closing the discussion: Does he find that a porcelain and platinum crown made for the anterior teeth has sufficient strength to bear the severe strain to which incisors are often subjected? It has been my experience that it has not.

DR. L. H. ARNOLD:

There were one or two points mentioned by the essayist which are questionable, and the first is with reference to the "*evaporation*" of gold. Does gold evaporate, or does it alloy *thoroughly* with platinum? There is another way of getting rid of the surplus gold (which is universally conceded to be in the way after it has done its work). Use, as the essayist has said, twenty-five per cent platinum solder, and use quite a liberal quantity of it, more than one ordinarily should. After the work is done, and the facing is soldered on, place it in "aqua regia," pure, for fifteen minutes or so, which dissolves the gold rapidly. Of course, it also attacks the platinum, slightly, but not enough to injure it. The solution left after thus pickling is a nice photographic solution for toning ordinary "silver" prints. It is a solution of gold and platinum, and if any of you indulge in photography, you will find the silver paper will tone nicely with the solution after the acid has been neutralized. In pickling the bridge there is a film of apparently pure platinum left after the gold is dissolved, which is exactly the shape of the piece of solder laid on in the first place, which raises the question as to whether solder is a thorough chemical alloy or a mechanical mixture.

Another point regarding union of the porcelain and platinum into a mechanical whole. The finished cap, before waxing to the facing, is perforated from the root side with a sharp-pointed instrument, care being taken not to "spring" the work in punching.

Punching from the underside turns up a "burr" to receive the porcelain as well as leaving a hole flaring toward the root.

When the porcelain is baked it will be found to have filled these holes and around the "burrs" tightly, thus very materially adding to the strength of the finished piece.

DR. W. H. TAGGART:

With reference to the evaporation of gold from the platinum, I do not think there is any necessity for paying much attention to that. As I understand it, platinum raises the temperature at which this alloy fuses, and as the temperature is raised it never requires a higher temperature to fuse the alloy than it does to fuse porcelain. I have not had any trouble in regard to bubbling from the gold forming a vapor and passing off through porcelain, and I can hardly see the necessity for taking all of the precautions that Dr. Fernandez does. I have found in porcelain work that I get the most satisfactory results either in continuous gum work, or in crown work, by bringing the porcelain up to the full contour. Neither do I take the precaution to have three or four different kinds of fusing bodies. I do it all with one fusing, with a porcelain that fuses all at the same temperature.

Dr. Fernandez spoke of cementing the crowns to place. I am a little bit surprised at this late day that a man who does porcelain work will stick to the old method of using cement, when gutta-percha answers every purpose that the cement can, and goes a step or two further. In using gutta-percha to put the crowns into place, it forms a cushion which takes away a great deal of the strain which comes on a porcelain crown. It is the rigidity of cement that has a great deal to do with the breaking of a crown; whereas if gutta-percha is used between crown and root, the chances of breaking are slight as compared with those when it is set with cement. If you wish to remove the tooth, you can do it in five minutes without mutilating anything, not even mutilating the crown, and it is almost an impossibility to remove a crown that is set with cement without injuring it. I had occasion to-day to remove a central incisor which was put on by means of gutta-percha seven years ago, and I do not

think I was over five minutes in doing it. I took it off, made an inlay for the other central, which gave me ample room, and knowing that this crown could be so easily moved, it was no trick to do it. It gave me plenty of room to make the inlay, which would have been difficult by the other method.

Dr. Fernandez made a very sweeping statement in his paper to this effect, that the best and only way to tell how to fuse porcelain is by the melting of a piece of pure gold. There are other methods which are equally as good. My way is to use a time attachment to my furnace. Some will object to that by saying the current is not always the same. I do not think there is any comparison of accuracy between the two methods. I find a piece of porcelain bakes in eleven minutes, and I set the clock at eleven minutes exactly. I close the furnace, and in eleven minutes to a second the porcelain is baked. So I would question the assertion when he says that the best and only way to fuse porcelain is by the melting of a piece of gold. There is not one man in twenty who can tell when a pellet of gold is melted. There will be great differences, according to how it is viewed at one time and another with a different light, so that a hundred degrees of variation may occur.

In porcelain work, my idea is to get a bulk of porcelain wherever you can. Mr. Brewster referred to extending the pin, and letting it pass beyond the cap so as to go into the porcelain. It seems to me, every time a piece of metal goes into a piece of porcelain it weakens it, so that the platinum extending above the cap to furnish attachment for the porcelain to the cap is not going to add any strength to it. For instance, if the post runs up through the center, as the doctor has described, constituting one-half of the piece of porcelain, it is not as strong for its bulk as if it was all one piece. You have bulk in one way, while in the other you form a center for cleavage. There will be a dozen different directions around the pin where cleavage can commence, and to that extent you weaken your piece of porcelain. I grind the metal away as much as I can, and round all the corners so as not to leave a little angle to allow cleavage to start in the porcelain. In doing this I have a much stronger crown than I did formerly.

DR. F. E. ROACH:

I want to extend my thanks to Dr. Fernandez for his excellent paper. I feel I have obtained good from it, and while I have been

getting away to some extent from using bands in the anterior teeth for porcelain work, I believe after hearing this paper and seeing this method, I probably can use bands to better advantage and obviate in the future the unsightly exposure of the bands. I have tried hard to overcome that feature of it in making and fitting bands, but I have been unable to do so.

I disagree with Mr. Brewster in regard to the extension of the post, as I think that is an element of weakness rather than strength.

I do not agree with Dr. Taggart in regard to the degree of heat or the method of determining the fusing point of porcelain by the melting of a pellet of gold. It is the simplest thing on earth and is just as reliable as any time clock. I have tested my furnace time and again, and the current varies so materially that it would be unreliable by any other method.

DR. J. W. WASSALL:

The question of ascertaining the amount of heat that goes into a furnace is an important one, and I believe the only way for its accurate determination is by the use of proper means for measuring electric current. With that end in view I have recently put on the wall, over the ovens in my laboratory, a volt-meter and an ampere-meter. These have not as yet been connected with the furnaces, but we hope in this way to soon get at the scientific management of the current.

DR. HART J. GOSLEE:

I regret very much that I did not have the opportunity of hearing Dr. Fernandez' paper, but another engagement detained me until after the discussion had been started. However, it is a subject with which I am more or less familiar, and after listening to the discussion of Dr. Taggart, I think I can say something upon it in a general way.

The "volatilization" or "evaporation" of pure gold has been mentioned, I do not know whether by the essayist or not, but, at any rate, by the other speakers. I think chemists tell us that gold will volatilize, when subjected to heat, but I want to state that it takes a far greater degree of heat than is required in fusing porcelain to volatilize it. If it is simply melted and remains in globular form, to be covered over by porcelain, unless the point of fusion of the porcelain is practically the same as that of gold or lower, it disappears, but this is not due to *evaporation*, or to *volatilization*. It is *absorption* of the gold by the platinum. If an excess remains and

is absorbed by the surface of the platinum, thus becoming alloyed with it, we of course have a vacuum left, and this will invariably cause porosity. But this is unnecessary, and can be overcome, if you want to use pure gold as a solder, and I almost always use it for single crown work, if I can obtain contact between the pins of the facing and the post, or the cap. If you use pure gold as a solder you must first have perfect contact between the parts, and then if you fuse it *thoroughly* it becomes alloyed with the platinum, and you have practically a brazed or platinum soldered joint. If you do not have sufficient contact, however, between the metal parts, and the platinum pins, you will not get an alloyed joint, and must then make use of twenty-five per cent platinum solder to get the necessary strength.

Dr. Wassall has asked with regard to the strength of porcelain crown work. I do not know just exactly what the essayist said upon that subject, but I am prepared to say from clinical experience that if porcelain crown work is properly constructed, it does have the necessary strength; and that for the ten anterior teeth I have used it in a very large per cent of my own work, and in the clinic at the college, which has been more or less extensive, for the last four years, with a minimum of failures.

I agree with Dr. Taggart in that one grade of porcelain body should usually be used throughout the entire work, and can see no necessity for using two different grades, if we can get one grade that has the requisite colors and strength.

The argument made, I believe, in favor of using two grades is, first, by beginning with a high fusing body you secure greater strength of foundation, and, second, by then using a lower fusing enamel you get a greater degree of vitrification; or a more highly glazed surface. One can get a glazed surface to any body if he fuses it properly. You can take Close's body, or you can pulverize any of the porcelain teeth on the market, and fuse them in the electric, gasoline or gas furnace until you get a vitrified surface, and I invariably build up to the desired contour for the first baking, and if this is done two bakes will be all that is necessary, when one grade of body is used.

As to the gold test in the fusing of porcelain, Dr. Taggart says that he does not believe one can see a pellet of pure gold fuse in a furnace, or, at least, distinguish the exact point at which it fuses.

If I were to depend upon the gold test in fusing porcelain, I should not put a globule of gold in the furnace, because it would be a difficult matter to distinguish just at what point the globule begins to fuse. If, however, you hammer the globule out flat and put it in as a flat piece, or use pellets of foil gold, you can tell exactly when it fuses, because it will at once assume spherical form.

The fusing of porcelain is largely a matter of experience. I had occasion to say a good deal upon this subject at a recent meeting of the Odontographic Society, and perhaps it is unnecessary for me to repeat it here. I firmly believe that anybody who does porcelain work in the city of Chicago, or who is at all interested in it, and is willing to experiment a little, can learn to fuse porcelain in a furnace without the use of *any* test. One can see porcelain fuse in a furnace irrespective of whether it is a bright, sunshiny day, or a cloudy day, because the degree of heat and incandescence necessary in the fusing of porcelain is not affected by the sunshine or the clouds.

You can fuse porcelain without a time or gold test if you will watch it, and it is simply a question of watching it closely from the beginning of vitrification. Over-fusing is what destroys the integrity of the work and causes, I believe, from eighty to ninety per cent of the failures we have in this line.

With reference to the extension of the dowel into the body of the porcelain, Dr. Taggart has quite properly expressed my own opinion when he says that the surplus end of the dowel exists at the expense of the strength of the porcelain. It cuts it right in two, and as there is no question but what porcelain increases in strength in proportion to its bulk, we must use as much as possible to get strength, and not divide it by a bar running through the center.

I also agree with Dr. Taggart in everything he has said with regard to the use of gutta-percha. I do not know what the views of the essayist were in this connection, but any crown, and particularly a porcelain one constructed with a dowel, should be mounted in whole or in part with gutta-percha. I believe that the main reason gutta-percha is not used more than it is may be attributed to the fact that we have not experimented long enough with it to be able to use it skillfully, and I am sure if any of you will learn to use it skillfully, you will adopt it. The cushion-like effect afforded by it is one of the strongest points in its favor; and

the facility with which it can be removed in cases of fracture without destroying the cap or any of the tooth structure is another important feature.

MR. ROBERT BREWSTER:

With reference to the length of post, I think my remarks have been a little misunderstood. I stated that with medium and long teeth, the post, in order to give additional strength to the porcelain, should extend above the cap about one-quarter or one-third of the total length of the crown. I find by considerable experimental work that porcelain must be supported by a given amount of stiff platinum, the object being to get sufficient support for the porcelain, and remove as much strain as possible from the soft platina pins of the facings, and also to add strength to the thin cap and band, which is accomplished by the extension of the iridio-platina post the proper distance through the cap.

DR. C. S. BIGELOW:

I wish to thank Dr. Fernandez for his excellent paper. I have learned something this evening in regard to the extension of porcelain below the gingival margin and in having it so that it will not cleave from the band. I regard that as a valuable point. It would be rather presumptuous for any one having such a limited experience in this work as myself, to try to offer anything new. But, unfortunately, I belong to that class of thick-headed "schoolboys" who have had to learn a good many simple things by hard knocks. One little detail I have learned, is with reference to ascertaining the exact location for drilling a hole through the cope, so as to get it exactly opposite the hole in the root. I have made use of 29 platinum for the top of the cope, and it is not feasible to burnish that down as with the thinner platinum, or pure gold, commonly used in the Richmond crown. I have taken a small piece of soft wax, such as is used in the dental depots in attaching teeth temporarily to the models, which softens at the temperature of the fingers, and put it inside the cope, pressed it gently on the root, not enough to cause discomfort, and upon removing it, an elevation will be found corresponding exactly to the hole in the root. Take a small instrument, with a sharp point, push it through the center of the elevation in the wax, and you have the exact location of the center of the hole for your post. This has helped me a great deal.

I agree with what has been said, that it is unnecessary to add a

support to the lingual cusp of a bicuspid. I have yet to have a single bicuspid cleave or split through the center, and I have been putting them on for some three years. But I have tried to use judgment in the selection of my cases, and where the bite is extremely short I do not use a porcelain crown.

DR. FERNANDEZ (closing the discussion):

I have devoted considerable time and study to the preparation of my paper, so as to be able to present this method to the society. This system of making crowns for the ten anterior teeth is the result of a great many years of practice and experience. It saves me lots of work and trouble after the crowns are made.

I wish to thank the gentlemen for their rather sharp criticisms, because I should have been very much disappointed if the paper had not been discussed. Some of the members who took part in the discussion repeated many of the ideas contained in the paper.

Dr. Wassall asked whether a porcelain and platinum crown, which is made for an anterior tooth, has sufficient strength to stand the strain. I have found that it is the strongest crown that can be made. I said in one of the paragraphs of my paper that dental porcelain crown work, properly done and judiciously applied, is one of the most useful and gratifying services the conscientious dentist can offer his patient.

With reference to baking crowns, Dr. Taggart has a furnace that is ideal, and he can do with it what we cannot do with another. I use the Hammond furnace, and I have tried at least two hundred times to bake a crown with it, and I cannot get the same result, anywhere near, by timing it, but by the gold method I can get the results almost alike every time. The question arises as to whether we can see gold melt or not. We must not take a piece of gold and flatten it out and gauge from that. It should be a gold cylinder, of No. 4 foil, which answers the best purpose. I said in my paper that it is the best and only method for the fusing of porcelain, and I believe it is.

Dr. Wassall spoke of using a volt meter, and an ampere meter in timing such things. While such instruments may be useful for other purposes, I do not think they will answer our purpose. It matters a great deal whether we should save our eyesight or not. I believe Dr. Goslee, if he watches the furnace with his eyes in fusing porcelain, will eventually lose his eyesight. I have gone

through the mill myself, and came near losing my eyes, and if it were not for that I would not have to wear glasses to-day.

One of the speakers (Dr. Arnold) referred to dissolving gold by the use of aqua regia. It is the only way to dissolve gold entirely. It is a good method.

In using 30 per cent platinum for soldering the parts together, you should bend the pins down as near to the cap as possible. If they reach it, so much the better. You must get actual contact. I use a small amount of solder, and of course, a certain amount of gold is absorbed by the platinum, but the easiest and most reliable method I have found of getting rid of it is by evaporation.

In regard to the remarks of Dr. Goslee, he discussed many imaginary things that were not in my paper, simply because he did not hear it. I do not wish to offend him at all, but I do not see how any man can discuss intelligently a paper which he has not heard. Of course, he can discuss the discussion, but not the paper. (Here Dr. Fernandez demonstrated and elucidated by the aid of the blackboard diagrams and charts many of the points of difference which were brought out in the discussion.)

THE ODONTOGRAPHIC SOCIETY.

Regular meeting of the Odontographic Society, held in Room 613, Masonic Temple, Monday, April 21, 1902, the president, Dr. C. N. Johnson, in the chair.

A symposium on "The Status of Porcelain Inlay, Relative to Low and High Fusing Bodies," was read by the following gentlemen:

"Low Fusing Bodies," by Dr. A. E. Morey.

"High Fusing Bodies," by Dr. J. S. Bridges.

"The Advantages of High Over Low Fusing Porcelain," by Mr. Robert Brewster.

The papers were discussed as follows:

DR. W. T. REEVES:

In the use of porcelain I have had a limited experience in the use of low fusing bodies. I have discarded them entirely for the reason that so much better results can be obtained from high fusing bodies. You can obtain shades that will be reliable. You can manipulate your shades and vary them as you will from any shade

at the neck of a tooth to a different shade at the cutting edge with high fusing body. Different people vary in their way of handling porcelain to obtain results. In regard to my method of baking porcelain in layers, that can only be done successfully by the use of high fusing body, and in connection with inlay work I think it is one of the means of doing away with what is called the shadow problem which is the bother of every inlay worker who attempts to mix a few bodies together and arrive at an approximate shade that you think will be the shade in the inlay, and then make the inlay all of that mixture. By starting in the matrix with what might be called a foundation, and on that foundation laying the color to be desired, and laying in darker colors than are expected to be the ultimate outcome of the inlay, and over them baking another color that might be called an enamel color, I think produces the best result in inlay work. It certainly gives the translucent effect that you can get in no other way. There is one feature in connection with high fusing body that was not mentioned, i. e., that you can obtain a contour and hold it. You can finish your inlay so that it will be perfectly flush with your margins and not have any raised effect, or warted effect that you would get with the use of a low fusing body. I think it is a mistake to make inlays with the expectation of grinding them after they are set. In a few places, like trimming the cutting edges of inlays in anterior teeth, or the occlusal surfaces of inlays in molars and bicuspid, this could be done with a stone after setting, but those are the only places that I consider should be touched with a stone. If the necessity arises for altering the shape of your inlay it should be done previous to the stripping of the matrix and put in the furnace and glazed again. The use of primary colors in inlay work is something that will appeal to the artistic sense of everybody if they only start and try to use them. You have teeth that at the cutting edge have a steel blue tinge, almost transparent teeth, and yet just the line above the cutting edge there is a grayish tinge. You can obtain that by painting a faint line of high fusing body of a deep blue color and then overlaying that with other enamel body and allowing it to reflect through. The same way, if you have cusps of bicuspid or molars that have a brownish tinge under them, or gray, which often occurs, you can obtain that same effect with this high fusing primary color and allowing it to reflect through what might properly be

called the enamel color. In the use of high fusing body in inlays I think you can obtain perfectly firm margins in which there is no danger of splintering; I doubt if it can be done with low fusing. The experience I have had with low fusing body has been confined entirely to the low fusing Downie body. I have yet to see any inlays made with the Jenkins body that I think compare with those that can be made with the high fusing body.

MR. PRESIDENT:

I should like to ask a question regarding the character of this enamel. If it expected to be as nearly transparent as possible? What is the nature of it?

DR. REEVES:

The nature of that is a body that is high fusing and comes in a number of ranges of color, and the final color that you may put on will be of a very light yellow or a greenish tinge that is practically translucent. In looking for a color for making an inlay the mistake is too often made of looking for a color in the same way that you would match a facing in making a crown. You might take a facing for a crown and set it between two teeth and not be able to distinguish that there was any difference between the three, while if you took a corner off of either tooth it wouldn't match at all. In looking for the color of an inlay you want to look for what is an underlying color. The enamel of a tooth is practically the same in all mouths. There are very few mouths in which the color of the enamel varies any to speak of. In speaking of enameling color what I referred to is the last layer that I place after I have gotten the color desired.

DR. C. E. BENTLEY:

Those of you who read the last issue of *Items of Interest* reporting a symposium held on porcelain work in the East remember how that meeting practically endorsed low fusing body. Dr. Ottolengui read a most excellent paper on that occasion. It was a splendid résumé of porcelain inlay work, citing its uses and limitations, but made a special argument for the low fusing body. Everybody at the meeting who discussed the paper practically endorsed low fusing body. Now, it did seem to me that there was a radical difference between the East and the West in this particular. The East was enthusiastic over low fusing body; the West equally as enthusiastic over high fusing body. Every paper that has been

read here this evening has been in favor of high fusing body, and if this is a consensus of opinion of western men it is certainly antagonistic to the opinion in the East. One of the most remarkable statements made this evening, it appears to me, is that made by the man who has had the largest amount of experience in porcelain work, Mr. Brewster. He said that porcelain that will fuse at 2200 degrees F. reaches its maximum usefulness. That is to say, the strength, the preservation of density, the stability of form and the stability of color seem to be maximized at that point. That is a remarkable statement, and it comes from his experimentation and experience. There are some bodies that fuse at 2700° and 2800° that are called exceedingly high fusing bodies. There doesn't seem to be any advantage in having a body fuse at 2700° or 2800°. It adds nothing to its strength, it adds nothing to its stability of form or color, it adds nothing to its density, but it detracts from these qualifications. He has also said that low fusing bodies, or any body that will fuse below 1814° also detracts from these necessary qualifications. It seems to me there is the fighting ground. Now, if this statement be true, that anything below 1814° or anything beyond 2200° deteriorates these four essential qualifications of porcelain, then we want to get a porcelain that will fuse at 2200°, and that is the porcelain that we desire to manipulate. If this test be true, low fusing bodies are not included, and any body that is beyond 2200° is also not included. So, therefore, I say that this is to me an essential factor in the discussion, and this is one of the reasons, it appears to me, that high fusing body should be used as against low fusing body. Now, if I understand it correctly, Jenkin's body contains the same ingredients as the high fusing body, with the addition of an alkali, sodium or potassium, reducing the fusing point. You can take any high fusing body and add potassium or sodium to it and reduce the fusing point, but according to this test anything that is below the fusing point of gold does not preserve these points. I don't know very much about the physical properties of porcelain, but take the word of experts upon that subject. I simply wanted to discuss the subject along the lines indicated in the program, and I trust that the points that Mr. Brewster and the other gentlemen have brought out will be emphasized because of this meeting in New York. I cannot see why the East clings to low fusing body. I do not admit that it is easier to

burnish gold into a cavity than platinum. I believe that platinum can be burnished into a cavity with much more degree of certainty and fixity than gold, when you know how to do it, and it is not necessary to incorporate that platinum matrix into an investment as you would necessarily have to with a gold matrix, which takes time. I think that there is every advantage over the low-fusing body by using the high-fusing body.

DR. REEVES:

Dr. Bentley stated exactly what I think. If the paper of Dr. Ottolengui was here to-night for discussion there would be a great deal that I could say in discussing high and low fusing body. There was nothing brought out in the papers to-night that I could see but that was all in favor of high-fusing body. Even the one which was on the subject of low-fusing body did not bring out any argument in favor of his side of the subject. That was the reason that I stated I thought the papers discussed themselves.

DR. DON M. GALLIE:

If there is any one important thing in connection with high or low fusing body it is the question of color; to know how the color will last and how to obtain it. Mr. Brewster classified the different points that should go to make up a perfect body, and one of the strong points was that of color. Eight years ago I purchased a low fusing body, and according to test this body was perfect. I became very enthusiastic on the subject. Everything that came along I reproduced in porcelain, and the result was that the chickens came home to roost one by one, and I found that the body was not serviceable. I recently began using the high fusing bodies, and to my mind there is no comparison between the two. To discuss high and low fusing body means to discuss the whole question of porcelain—the color, the edge strength, the matter of contouring and getting the results that we desire to get from this material. But many of us who are not as expert as Dr. Reeves will find that the greatest trouble we will have is in the color. You will find that different furnaces act in a different way. Dr. Bentley's furnace takes one minute longer to fuse than mine does. In my furnace I will fuse on one point two minutes, on the next point two minutes and the next one minute and get good results, and the next day by following the same course I will find that my porcelain has over-fused. I think the question to discuss also is how these bodies can be best used, and in the making of inlays one of the things to con-

sider is the making of the matrix. Dr. Bentley says he doesn't think it is any easier to burnish a gold matrix into a cavity than a platinum matrix. I do. I can burnish it in easier, but I can't get it out. In reproducing one-third the cutting edge of a central incisor it is nice to have your platinum matrix to try over the tooth to see if the contour is right. I think the whole subject of porcelain should be discussed here to-night, because it all goes to add to the relative merits of low and high fusing body. For my part, I am very much in favor of high fusing body. The greatest difficulty I have is in knowing just how to manipulate the different colors.

DR. HART J. GOSLEE:

In the use and application of porcelain for our purposes there are four requirements that I shall classify perhaps somewhat differently from Mr. Brewster. The first requirement is that of strength, the second is that of stability of color; stability, then, of form, and last, translucency. Now, gentlemen, an experience of some eight years, somewhat more or less extensive, in the use of both high and low fusing body, beginning with the low and ending with the high, has convinced me conclusively that we have practically no use whatever for any body that will fuse below 2,000 degrees F., with the possible exception of some classes of extensive cavities where it is desirable to construct a porcelain restoration in the posterior part of the mouth. It may be indicated to some extent in such cases for the reason, I believe, that it is easier to burnish gold into a difficult cavity, and particularly if it is a large one, than to burnish a platinum matrix, and because color is not so important and strength is increased by the additional bulk. And I also believe that it is possible for me to prepare a cavity in a molar that Dr. Reeves or Dr. Bentley will admit can be better fitted with a pure gold matrix than with a platinum matrix by either burnishing or swaging. This point of ease and facility is the very reason why the East have become so enthusiastic over low fusing porcelain. They can adapt a gold matrix to a cavity with greater facility and greater ease. I predict, however, that the time will come when those who become expert and skillful will discard it and take up the high fusing bodies, for the reason that they possess greater strength, that they hold their form and color better and that they are more translucent. I think the low fusing bodies have a greater density than the high fusing, and that the density of the body depends much upon its being properly fused. In the fusing of porcelain I am

inclined to believe that no one will become exceedingly successful who depends altogether upon any test. I do not believe that any one can properly fuse porcelain until he has learned to SEE WHEN it is fused. One reason why we depend upon tests is because a great many, and particularly beginners, are afraid to open the furnace and look at their work, in which there is no danger at all. The use of a test of pure gold is advantageous only in this respect, that you need not watch it at all up to the fusing point of the gold. From there on, however, you have to watch it just as carefully, until you get your exact time, at least, as you would have to do if you watched it all the way through. And I believe if you will endeavor to get along without the gold test that you will become so familiar with the heat and degree of incandescence that you can tell from the appearance of the furnace when it is necessary for you to begin to watch it closely. It is true and has been stated that in one furnace the body will fuse in two minutes after the fusing of the gold, and in another three minutes, and that variation exists with everybody and with every furnace. The voltage varies and is not always the same in the same furnace and the pressure of air likewise varies in the use of gasoline; therefore, gentlemen, to summarize with regard to fusion I would say that every one who hopes to do successful porcelain work should not only familiarize himself with the character of the body, but also with the method of properly and accurately fusing it, and I predict that anybody who does become at all successful will learn to do it without the use of pure gold or any other test. If Mr. Brewster says that the maximum quality of strength in dental porcelains is to be obtained between 2200° and 2500°, then why not combine the possible advantages of both minimum and maximum, in one grade of body, and strike a happy medium? It has been said that the low fusing body will give you a better enamel surface. This I am not prepared to believe, because the surface of porcelain, if it is at all fusible, is gained by carrying it up to the proper fusing point to obtain complete vitrification, and I get just as good an enamel surface on a body that fuses at 2600° as one that fuses at 2000°.

These fusing points are based upon the fusing point of pure gold as being 2016° F.

DR. J. E. NYMAN:

The point that Dr. Bentley dwelt upon, the point in Mr. Brewster's paper in regard to the fact that he had found that porcelain

which fused at a certain temperature, 2200° , was stronger than one that fused at 2700° , should merely demonstrate one fact—i. e., that there is a proper relative proportion of the ingredients of that porcelain, and the moment you decrease the amount of flux and increase the amount of kaolin and the silicates, you raise the fusing point of that body and detract from its strength. Perhaps I can illustrate this better by referring to a material with which we are all familiar, and that is cement. There is a relative proportion of the powder and the liquid which will yield the best results. If you increase your amount of powder and decrease your amount of liquid you get a cement which is not as strong. The same is true in porcelain; if you make a porcelain body which has too much of any one ingredient in it you get a porcelain which does not fuse at the fusing point Mr. Brewster has referred to and which does not present the proper physical characteristics for our use. Now, I must take a little issue with Dr. Bentley's statement about the East having gone wild over low fusing body, because it has only been within the last year that we have heard anything from the East on low fusing porcelain. Many of the men down there have favored high fusing body, and it was only after a visit of Dr. Jenkins that they began to advocate low fusing body, and I do not know how much that was due to the personal entertaining characteristics of Dr. Jenkins himself; I imagine that Dr. Jenkins has enthused these men with some of his own personality. Dr. Ottolengui made some statements in his paper which, to any one who has had any experience in porcelain, were, to say the least, ridiculous. He stated that shrinkage in low fusing body was less than in high fusing body. That can be refuted in both clinical and laboratory tests. Another was that he could fit gold matrices into cavities where platinum matrices could not be fitted. You will note that I did not say that he could burnish gold into cavities that platinum could not be burnished into. I dispute that statement also. In his paper he also gave some illustrations of inlays, and if those were accurate illustrations he could not get that matrix out of the tooth without springing it. Now there is another point which is an argument against low fusing body, and that is that we are all variable quantities ourselves. There is a personal equation which should be taken into consideration in all our actions. If we should by any chance over-fuse a low fusing porcelain five seconds longer than we should we might ruin that inlay, whereas if that was a high fusing porce-

lain it would not have an appreciable effect on it. Furthermore, the coloring matters that are used in tinting the low fusing porcelains are not the same that are used in tinting the high fusing. Most of the frits that are used for coloring high fusing bodies are oxides, and you cannot get any tinting from these materials with a substance which fuses below that of gold. Therefore, they have had to cast around for some other metals to supply this color, and it just so happens that there is not a single color supplied in the low fusing body which harmonizes in any degree whatever with the natural color of the teeth. So I cannot see any excuse whatever for using the low fusing porcelain. In fact, there are many arguments against it. It lacks structural strength; it lacks the harmony of color; there is danger of overfusing it; there is danger, if you run it a little too long, of fusing your whole matrix, and there is just as much danger of tearing the matrix as there is with the platinum matrix, with the further disadvantage that you cannot build low fusing body over a tear in a gold matrix. So I can see no reason at all for parading the low fusing body before the public.

DR. HART J. GOSLEE:

About two months ago I had occasion to visit Dr. Ottolengui and found him to be a very enthusiastic advocate of low fusing body and very skillful in its manipulation. I also ascertained that he had never used high fusing bodies, which I believe he acknowledges in his essay. I am not aware, however, that he has claimed that there is more shrinkage in the high fusing body than in the low, and such a claim is easily refutable. I believe that Dr. Van Woert is also at present an extensive advocate of the low fusing bodies, but they are the only two of prominence that I know of in the East who are using them.

DR. EDMUND NOYES:

I would like to ask one question. The trend of this discussion seems to indicate that the exact fusing of porcelain is very important, that it should not be over-fused. Now is it possible to prepare for us platinum solders whose fusing point will correspond with the required fusing point of the porcelain with which they are made to use, so that instead of timing the furnace after the fusing of the pure gold, or watching it with the eye, we might have a platinum solder which would indicate, when it rolls into a ball, that it is just exactly at that point our porcelain is fused properly?

MR. BREWSTER (closing the discussion) :

With regard to Dr. Goslee's estimate of the fusing point of the foundation body, he has probably arrived at that from a table giving the melting point of gold as above 2000° , whereas my pyrometers are based on the melting of gold being below 1900° . No two authorities seem to agree as to the melting point of gold. In five authorities the range is from 1886° F. to 2200° F.

With regard to the particular use of the foundation body in inlay work, its value lies in rendering the matrix firm and unyielding prior to the application of the enamel body, the subsequent and repeated fusing of which does not affect the foundation body, and consequently causes no contraction of the matrix, a possible occurrence, if the whole mass fuses at each baking.

I see no good reason for raising the fusing point of porcelain beyond what I have indicated, as I find by dynamometer tests that teeth made from the enamel body withstand a higher crushing strain than teeth which fuse at 2800° F.

In reply to Dr. Noyes' question, metal tests such as he mentions are on the market, and may be obtained, but they are somewhat more expensive than pure gold.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

SOCIETY PROCEEDINGS.

The criticism is frequently made, and probably justly so, that the society proceedings in our dental journals are for the most part imperfectly edited. There is too much printed which has little significance or little of essential value—too many words for the ideas contained therein. And yet the editor is not so much at fault as his critical readers might suppose. There are usually two sides to all questions, and sometimes three or four, and it would seem as if there were more sides to this question than to any other connected with professional journalism. In the first place be it known that the stenographer's report of discussions of papers before societies is sent to each member taking part, with the request to have it revised for publication, and returned to the editor.

This request may or may not be complied with, but in case it is, and the editor receives the corrected copy, it is something of a hazardous procedure for him to take too many liberties with it. In the very cases where it seems to be the most needed he is quite likely to be severely censured if he makes changes. It is safe to say that for an editor to go resolutely to work and revise all the matter that comes to him in this way, cutting out all the useless verbiage and leaving nothing but the meat, would be to offend half of his contributors.

And then again it is a question whether too much of the editorial essence should be allowed to permeate the society proceedings or contributions of a journal. Editors are only human and they have their individual points of view the same as other people. To hew down everything to the editor's idea would be to create monotony in a journal, and would destroy the individuality which characterizes the different speakers or writers. Part of

the charm of reading many reports of meetings comes from knowing the peculiarities of the various participants and studying their individual characteristics in what they say.

Most of this would be eliminated if the editor used his pencil too freely. But with all of this in mind it still remains true that there should be a more general boiling down of the discussions as published to-day in our journals, and if this is done with judgment on the part of the editor it ought not give offense to those of his contributors who are inclined to be reasonable. Let the editors and contributors get closer together on this important matter, and we are certain that it will greatly improve the pages of our journals.

THE DEPARTMENT OF PRACTICAL HINTS.

The interest which this department of the DENTAL REVIEW is eliciting is very encouraging, and it promises to be one of the most useful features of the journal for busy readers. It is found that many subscribers are already beginning to turn to this department when they first open the magazine. It always offers them something of practical utility, and they are certain to find ideas there which are not to be found elsewhere. This department is made up of articles written especially for it by men who are alive to the latest advances in all lines of our work. No item is copied from other journals, and this ensures a fresh and original presentation of the very best and most recent of the progressive and practical thoughts of the profession. Other journals are doing us the great honor of copying these articles quite freely, and we are much encouraged thereby, as we have full confidence in the judgment of our dental editors for the most part in selecting for their readers those things which will be of the greatest practical benefit to them. The wider these items are spread abroad in the profession the better it will be, and editors everywhere are welcome to copy them provided, of course, that they give just credit for them. The scope of usefulness for the department seems to be widening all the while, but to make it of the greatest possible benefit to all we should have a hearty response from our readers in sending in little items of practical value. There is no dentist in practice who has not some unique idea which has proved useful to him. It is the small things which go to make up the sum total of our practice, and every day

there will arise the necessity for ingenuity in the accomplishment of a difficult piece of work. When an ingenious idea strikes you jot it down and send it in. It will help others as it has helped you. In this way you will make the department a notable success, and the greater success it is the greater will be the benefit to all—yourself included. Do not wait till to-morrow—send in your items to-day. To-morrow never comes, to-day is the time to do things. Some other man may publish your ideas if you wait, and thus you will lose credit for them. Discoveries are often made in duplicate by two or more men at the same time, and it is the one who first gets his ideas before the world who obtains the credit. Send in your articles at once.

THE EDITOR'S DESK.

For lack of space we are obliged to push the desk aside for this issue and leave it in a corner of the room where it may accumulate dust for another month. We promise, however, to brush it off and open it up for our next issue. We confess that we are rather lonesome ourselves without it, but it cannot be allowed to push aside other matters of greater importance.

BIOGRAPHICAL SKETCH.

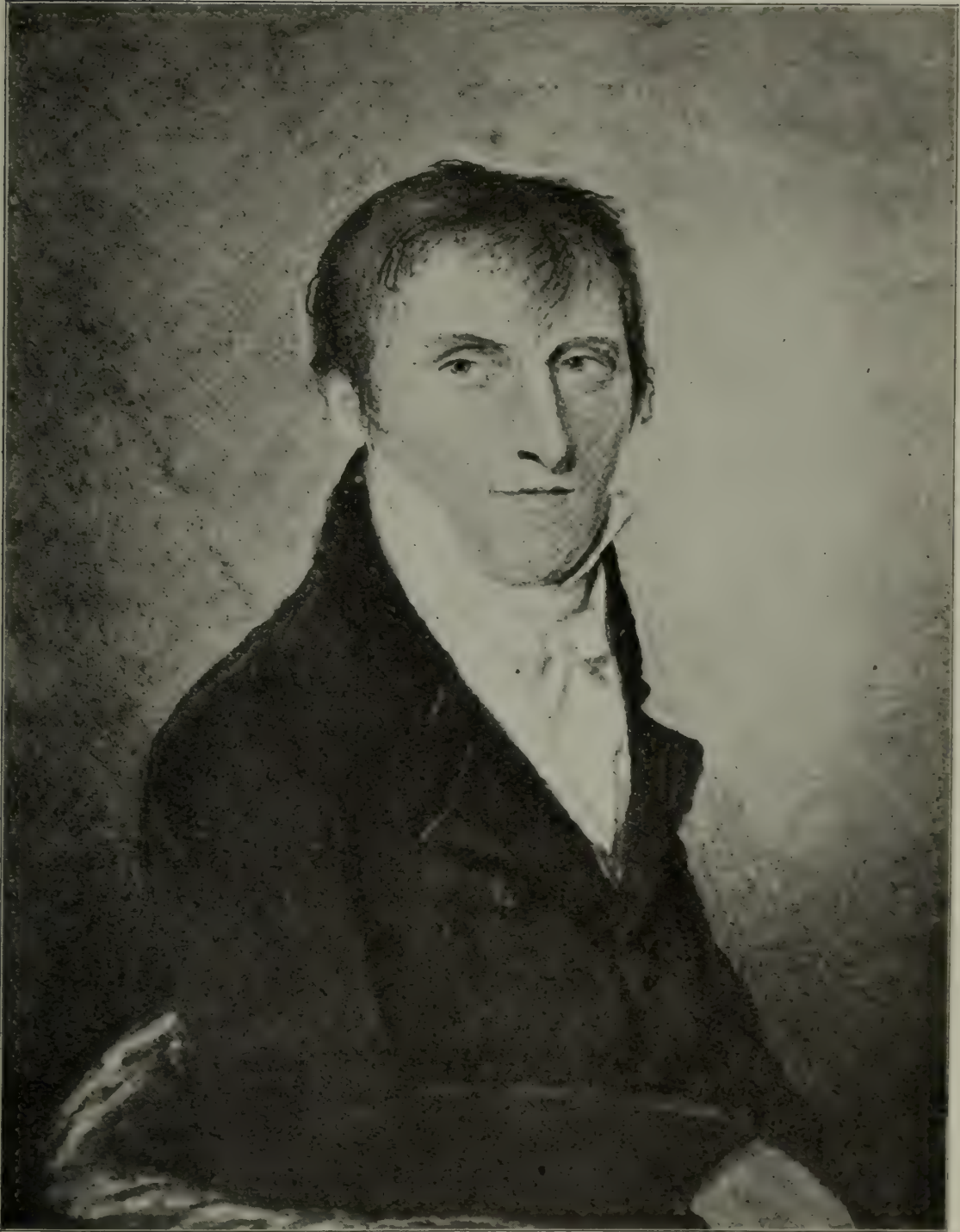
IX.

JOHN RANDALL, A. B., M. D.

BY BURTON LEE THORPE, D. D. S., ST. LOUIS, MO.

John Randall was born December 27, 1774, in Stow, Mass., where he spent his early boyhood. He was the oldest son of Silas and Elizabeth (Witt) Randall. He entered Harvard University and graduated, receiving the degree of Bachelor of Arts in 1802, with a class celebrated for the eminent talent of many of its members.

He studied medicine with Dr. John Jeffries, of Boston, and began his medical career in that city in 1805, being from the first successful. Desiring to further advance in his science he attended a course of lectures in the medical department of Harvard University, graduating with the degree of doctor of medicine, 1811.



JOHN RANDALL, A. B., M. D.

The circumstances under which he was led to turn his attention to dentistry are interesting as showing the character of the general dental practice of the time. Finding, while at college, his teeth decaying, Dr. Randall applied to the most prominent dentist of whom he knew and was frankly told by that practitioner that "his business was to put in new teeth," and that he declined operating to preserve the natural ones. This, in the light of his general education, appeared to Randall to be a very limited view of dental surgery, and he at once procured such dental works as he could and studied them under the impression that disease might and should be remedied without removal of the diseased member. His first efforts in dentistry were while he was in college, and were performed on himself. His fellow students were also benefited by his operations.

Dr. Randall practiced medicine and surgery as a calling but gave special attention to the teeth and mouth. He never advertised either branch of his profession, although such a method of obtaining publicity was resorted to by the most eminent of his contemporaries without any thought of it being unprofessional. "He was decidedly conservative in his theory and practice of dental surgery. He was very successful in treating and extracting teeth. He used the key with great skill and the forceps long before they were known as an article of merchandise. His success in pivoting teeth was very great."

He was one of the first members of the Massachusetts Medical Society. Dr. Levi Spear Parmly and Dr. Nathan C. Keep, the first dean of the dental department of Harvard University, were students of Dr. Randall.

His home in Boston was on Winter Street, on the site of what is now Shepard, Norwell & Company's store. Dr. Randall married Miss Elizabeth Wells, who died in Boston, January 29, 1868. She was the granddaughter of the great patriot of the Revolution, Samuel Adams. To them were born five children, four daughters and one son, John Witt Randall, born in Boston, November 6, 1813, who, after attending Boston Latin School, graduated at Harvard in 1834, and at the Harvard Medical School in 1839. He then devoted himself to scientific work, especially entomology, soon receiving the appointment of professor of zoölogy in the department of invertebrate animals in the South Sea (Wilkes) exploring expedition, but through delay he gave this up. Later he retired and devoted

considerable time to collecting engravings, of which he had the rarest and most original collection in America. He began six volumes of poetic works, only one of which he completed. It was published in 1856. He wrote a number of scientific papers, among them one on crustacea for the transactions of the Academy of Natural Sciences of Philadelphia; two on insects for the transactions of the Boston Society of Natural History; one manuscript volume on the animals and plants of Maine, furnished to Dr. Chas. T. Jackson to accompany his geological survey of that State and by him lost; "Critical Notes on Etchers and Engravers," one volume; and a classification of the same in one volume; also unpublished essays and reviews in manuscripts.

Dr. J. W. Randall died Monday, the twenty-fifth of January, 1892, age seventy-eight, at Roxbury. He never married. John W. and his sister, Belinda L. Randall, bequeathed funds to certain trustees to be distributed by them in aid of charitable objects. Of this fund \$70,000 was given Harvard to be used in the construction of a dining hall, known as Randall Hall. They also founded Randall Library at Stow, Mass.

Dr. John Randall died in Boston, December 20, 1843, aged sixty-nine years, having been a useful and honorable member of society, highly respected by both the dental and medical professions. He was one of the most eminent practicing physicians and dentists of his time in Boston; he was successful and popular and acquired by his devotion to his profession a handsome competency. Authentic data is so hard to obtain regarding Randall that an exhaustive account of his career is impossible. He should have a place among the early dentists of Boston such as Josiah Flagg and the Greenwoods, who were conservators of the dental organs.

He saw the need for dental knowledge and service and realizing the crudeness of the profession at that time and the possibilities offered, he was one of the first in Boston to take up the practice of treating and preserving the natural teeth and was an early advocate of preventive dentistry.

The facts contained in this sketch were obtained from Harris' Dental Dictionary, page 638, 1849.

Medical Communications, Massachusetts Medical Society, Vol. 7, page 166, 1848.

Dr. John Witt Randall's "Poems of Nature and Life," edited by Mr. Francis E. Abbott.

Portrait from painting in Randall Library, Stow, Mass., loaned by Dr. Chas. McManus, Hartford, Conn.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

NEW YORK, Nov. 1, 1902.

TO THE EDITOR OF DENTAL REVIEW:

It seldom is given to our dental societies to enjoy "incidents of office practice" so fully as was the lot of those present at the opening fall meeting of the Odontological Society on Tuesday, October 21. The president, Dr. J. F. P. Hodson, called upon Dr. W. W. Walker for a few remarks before the paper of the evening.

Dr. Walker has been abroad this summer and has gathered very much of value which he dispensed to the society.

He remarked that, "As I look about the room I see no *real* pyorrhoea alveolaris men here, but I met one this summer who *is*, and who *cures* that disease."

Dr. Fingen, of Copenhagen (the gentleman who has gained such reputation in the cure of lupus vulgaris, a tubercular condition, by the use of the arc light, the rays of which are concentrated by means of lenses) discovered that patients who came under his care while suffering from other diseases of the face but who were also affected with pyorrhoea, some whose teeth were so loose that they seemed beyond hope, after undergoing a course of arc light treatment would, together with their other cure, find their teeth had become absolutely firm in their sockets. Dr. Fingen followed such cases and found that the cure was lasting. Dr. Walker was so impressed with what he saw that he promises to install such an outfit as Dr. Fingen uses and is certain of success. He will also keep the society informed of the progress of the work.

The principle of the arc light cures is the destruction of germs which it is claimed respond very readily to its action. No cleansing of the teeth is done by the dentist at any time during the course.

The treatment is applied from one-half to three-quarters of an hour for twenty-one days, then a rest of twenty-one days is allowed and so continued for six months.

Dr. Walker met in Norway another gentleman who has been practicing for some years what Dr. D. D. Smith has been expounding so much recently—the monthly cleansing of the teeth in conditions of Riggs' disease.

Somewhat apropos to all this and having a peculiar significance at this time, was the presentation to the Odontological Society by Dr. A. L. Hitchcock, Hartford, Conn., of a framed, life size bust portrait of Dr. Riggs, which was accepted with fitting remarks and thanks of the society.

Dr. Walker also reported some work that Dr. J. Leon Williams, of London, has been doing of late, for which originality is claimed.

Dr. Williams places in the sockets, of irredeemable roots, after deepening the sockets, a conical shaped screw (made after the pattern of a root, spirally cut) of platinum, hollow I believe; it may be of tin or lead. He made his deductions of success in these cases (of retention by nature of such foreign metals) from the fact that metallic balls have been retained in the body in many cases without any discomfort. The screw is permitted to rest in the socket for some three or four weeks when it is unscrewed, a porcelain crown attached and then replaced. Dr. Walker's report was received with much enthusiasm and a vote of thanks was accorded him.

Dr. Perry spoke to some length about Dr. Williams' method and its probable practicability, of which he had no doubt; not that he knew the operation was a success from a trial of it, but because he had thought, too, that a metal root grooved might be retained by nature and has so expressed himself, and had also heard that such an operation had been recorded in the *Cosmos*.

The paper of the evening was presented next by the essayist, H. Clay Ferris, D. D. S., of Brooklyn, the subject of which was "Reflex Neurosis" with clinical illustration.

It was a portrayal of how closely related the dentist, aurist and oculist are. Dr. Ferris described several cases where reflex neurotic disturbances were entirely relieved by dental operations. One deserves some attention, owing to its peculiar character. A tooth had been extracted from the mouth of a lady who had no further trouble until about a month later she became cross-eyed. The doctor did not say how the patient came to return to him, but she did. He opened into the antrum (through the socket presumably) from which about two drams of pus were discharged. The case was much relieved, but it became necessary for the oculist to adjust and strengthen the ocular condition. All his cases of neurology he traces from dental causes through the Gasserian ganglion, and reflexly to the affected parts.

It must be said, too, that his paper was a clear, scientific presentation for which the thanks of the society was given.

Two very pleasant gatherings took place a week ago. They both celebrated the birthday anniversaries of true men. The seventy-year veteran, Dr. W. B. Hurd, of Brooklyn, gave a reception to his friends on Saturday afternoon, October 25. He had gathered about him at his home some men as old as he, some older, one a centenarian, and a host of others nearly that age. Many came from distant points to pay homage. Dr. Hurd is active, bright, full of wit and still practices. Many beautiful floral pieces had been sent to the Doctor in honor of the occasion, and were banked up all about the reception room. It was beautifully pathetic to hear the few words of reminiscence exchanged between the old men, something strong in memory, something which occurred and lived and bound these lives closely.

Among those present were Drs. S. G. Perry, A. L. Northrup, C. E. Francis, J. B. Rich, S. B. Palmer, of Syracuse, C. P. Cook and A. H. Brockway.

That evening there was another gathering to commemorate a similar event in the life of Dr. S. B. Palmer, of Syracuse, who had reached his eightieth year milestone. Dr. G. Lenox Curtis called together at the New York Athletic Club to sit at the same board a number of Dr. Palmer's friends. About thirty-three responded in person, a great number by mail or telegram.

Dr. A. H. Brockway, a worthy veteran himself, acted as toastmaster. He referred to the memorable patriarch's dinner which was given in New York about twelve years ago. Those who had been in practice fifty years or more were the guests upon that occasion. The only ones left are Dr. Hurd and Dr. Rich. Dr. Rich, who is past ninety-one years of age, was called upon. He responded with vigor that would do credit to any man half his age. His delivery is loud, clear, forceful and rapid. He certainly is a marvel. His remarks bore upon the infancy of dentistry and the struggle he and a few others had to establish and nourish the infant. The formation of a society, of a dental journal, a dental college, etc., etc. The latter, he said, was born in New York, but for the want of proper men of learning it was organized in another city.

Dr. N. W. Kingsley made some very apropos remarks, as did Drs. C. S. Stockton, J. F. P. Hodson, and Geo. A. Mills, who

said that Dr. Palmer was growing old cheerfully. Ah ! that we could all do that, Dr. Mills.

Among other speakers were Drs. E. Parmly Brown, F. T. Van Woert, Brewster, V. C. Jackson, Halsey, Hatch and Geo. Evans, who said he had refused an invitation to dine with the Prince of Siam (who was being dined at the Lotus Club that evening), because he preferred to be with the prince of the dental profession.

Dr. Palmer responded to all the eulogism in unassuming, kindly fashion. He gave an outline of his dental career, from the period of his first toothache. How the itinerant dentist relieved him of his distress. His ride of fifteen miles on horse-back one day, the loss of nine teeth, not too well done, and the necessary ride home.

Then of his need for a substitute, and not having seen a plate before, but hearing of some one who had one, he called and asked to see it. He examined it critically. He knew that he did not have the knowledge to make one, but determined to acquire it. There was a drug store in Syracuse that handled a few teeth, and there he saw a copy of some work on dentistry, which after much deprivation he procured. That was the beginning of his dental career. He made a plate for his own mouth soon after.

As to his electric theories he says he simply followed nature and trusted in science. The Doctor is so firmly imbued with the correctness of his theories that he predicts that all dental and probably medical science will be regulated thereby. Dr. G. Lenox Curtis told of his affection for Dr. Palmer, which dates back to his early professional career when Dr. Palmer did his utmost to pave the way for a future for him.

Dr. Brockway finally dismissed the gathering much after midnight.

"THE BOROUGHs."

REVIEWS AND ABSTRACTS.

ANATOMY AND HISTOLOGY OF THE MOUTH AND TEETH. By I. NORMAN BROOMELL, D. D. S., Professor of Dental Anatomy, Dental Histology, and Prosthetic Technics in the Pennsylvania College of Dental Surgery. Second edition, revised and enlarged, with 337 illustrations. Pages, 510. Price, \$4.50 net. Published by P. Blakiston's Son and Co., Philadelphia. 1902.

Excellent as was the first edition of this work the author has greatly improved it in the revision. It is really a choice volume of dental literature either for the student or the practitioner. The change in nomenclature for the second edition is most commendable, and it adds one more strong influence toward harmonizing dental terms in our literature. In speaking of the teeth the author has discarded the terms "superior" and "inferior," and has substituted "upper" and "lower." This is in line with the most advanced tendency in dental nomenclature as is also the substitution of "lingual" for "palatal." The author deserves great credit for thus observing the trend of thought in this most important particular. Taken all in all the work is of the highest merit, and is well worthy a place in every dental library. It reflects credit not only upon the author but upon the publisher, whose books are uniformly of a high order of excellence.

A MANUAL OF THE INJURIES AND SURGICAL DISEASES OF THE FACE, MOUTH, AND JAWS. By JOHN SAYRE MARSHALL, M. D., (Syra Univ.) President Army Examining Board for Dental Surgeons. Second edition, revised and enlarged. Pages, 715. Published by the S. S. White Dental Mfg. Co., Philadelphia. 1902.

The first edition of this excellent work was issued in 1897, and it is a healthy sign of the progress of dentistry and the interest taken in the scientific phases of it, when a book of this magnitude on such a subject runs to a second edition in this time. Dr. Marshall has long been known as a close student of this specialty, and his extended experience in his new field of work as dental surgeon in the army gives him excellent facilities for broadening his knowledge, and putting his years of study into active practice. This shows in his revision of the present work, and we bespeak for it a wide distribution among those interested in this line of work. It will be found useful to the medical practitioner as well as to the dentist, which is an indication of the breadth of treatment accorded the various topics under discussion. The publishers have supplemented the author's work by issuing it in the best of style.

A TEXT-BOOK OF SURGICAL PRINCIPLES AND SURGICAL DISEASES OF THE FACE, MOUTH AND JAWS FOR DENTAL STUDENTS. By HORACE H. GRANT, A. M., M. D., Professor of Surgery and of Clinical Surgery in Hospital College of Medicine, and Professor of Oral Surgery in the Louisville College of Dentistry. Published by W. B. Saunders & Co., Philadelphia and London. 1902. Price, cloth, \$2.50 net.

In the preface the author says : " That the object of the book is to present to the student of dentistry a text-book that will succinctly explain the various principles of all operative procedures, also to discuss such surgical lesions as are likely to require diagnosis and perhaps treatment by the dentist."

However, we were surprised to find this idea expressed, " An exhaustive analysis of the phenomena of inflammation and repair, as well as of the pathology of the essential processes of acute surgical diseases, is not desired by the student of dentistry during his college days, and the majority make no effort to acquire more than a clear understanding of these subjects."

" Again very few doctors of dentistry expect to practice even minor surgery, and those who do would seek to perfect their knowledge in another theater."

We take issue with the author that an exhaustive analysis of the phenomena of inflammation is not sought nor obtained by the average dental student, for we believe that this question is as extensively considered and equally as well understood by the student body of dentists as of those of any other profession, and in regard to the dentist who wishes to practice even minor surgery, we believe that the question of surgery of the head is taught more perfectly in the dental college than in any other theater, and those who wish to seek a profound knowledge on this subject should identify themselves with the oral surgeons found in our best dental institutions.

The book is conveniently and well arranged into twenty-nine chapters with a summary at the end of each.

Bacteriology, inflammation, ulceration, gangrene, autoinfection, surgical diagnosis, wounds, and general and local anesthetics are the points taken up for consideration in the first ten chapters.

The articles on hemorrhage, syphilis, tumors and diseases of the sinuses are more commendable than those devoted to neuralgias, cleft palate and fractures.

The author should be congratulated upon the very interesting conversational manner in which he has handled his subject. The work has much of value in it for the practitioner, but viewing it from a conscientious and practical point of view we deem it our duty to say that it will not aid the student body in a manner it could or should until many of the surgical principles and procedures have undergone a slight revision.

A few of the many statements upon which this opinion is based and from which we respectfully and courteously wish to differ is as follows: By "Thrombosis is meant the formation of a clot in a vein." "The free application of pure carbolic acid neutralized after a few minutes' exposure with alcohol is appropriate treatment for septic and gangrenous sinuses and pockets." "Syphilis is a disease of the blood of venereal origin manifesting itself, however, in every part of the body."

We are told that malignant tumors are essentially painful.

While the chapter on hemorrhage is well written, yet the technique necessary for the control of the excessive flow of blood that frequently results from the extraction of teeth is not given.

In speaking of fibroma, "Such growths show little tendency to malignancy, but when the situation is favorable they should be removed."

External incisions are advocated for the removal of major portions of the superior maxillary, also for the removal of sections of the infra-orbital and inferior dental nerves.

Lane's operation for cleft palate is laid down as the ideal, and dilute H^2O^2 is advocated as a wash every three or four hours for the first four or five days.

In the treatment of fractures of the lower jaw we find that for the uncomplicated fracture the Levis metallic chin splint which is to be held in place by the Barton bandage is all that is needed.

W. H. G. L.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The DENTAL REVIEW, 55 State St., Chicago, Ill.]

Inserting Gutta-Percha or Cement.—To keep gutta-percha or cement from adhering to the instrument while inserting in a cavity, dip the instrument into talcum powder or powdered soapstone.

R. B. TULLER, Chicago.

Quick Method of Drying Cavities.—To quickly and thoroughly dry a cavity prior to filling, apply a small pellet of cotton saturated with paraldehyde, and allow it to remain for a minute or two. Evaporate with hot air. Paraldehyde being more volatile than absolute alcohol, dries quickly.

W. H. SCHOENING, Hilo, Hawaii.

Carbonizing Dies.—A carbon flame, giving out very little heat, can easily be made by saturating a pellet of cotton with the shellac which we use in the laboratory. When ignited and the alcohol is burned off there remains a carbon flame which will readily carbonize dies for crown and bridge work or metal plate work without heating the die.

J. R. WATT, Chicago.

Mouth Mirrors.—To assume an easy position at the chair while operating, it is necessary to acquire skill in the use of the mouth mirror. There are many cavities so situated that they cannot be seen without its aid, and if the dentist is not proficient in its use, he is at a disadvantage in filling such a cavity. Try operating on the upper teeth by looking down into the mirror held at the proper angle. A plane mirror is preferable, as one that magnifies always distorts the object.

Removing a Pin from a Root.—When a pin is broken in a root and is held firmly by the cement, it can be removed by grasping the end with a pair of pliers and using a strong, narrow chisel as a lever between the end of the root and the pliers, care being taken not to chip off any frail edges of the root. The operation is much like prying out a tack with a screw-driver. It is often necessary to remove the cement from the end of the pin far enough to insure a strong grasp with the pliers.

R. B. TULLER, Chicago.

Sterilizing Instruments.—Broaches, separating saws and files, burs and other instruments, can be sterilized quickly without destroying the temper, by dipping them into alcohol and dislodging the large drops, leaving them slightly wet, after which the alcohol can be burned off. Care should be taken that the flame that ignites the alcohol does not take the temper out of the instrument. The burning alcohol will not injure the temper, but the instrument must first be cleared of any debris that may be adhering.

R. B. TULLER, Chicago.

Dentists Should Instruct Their Patients.—Patients usually appreciate the efforts of the dentist to preserve their teeth, but we sometimes come in contact with one who complains of the number of new cavities that are continually forming. This class of patients can be encouraged to persevere in their efforts to save their teeth if they can be made to realize the conditions that exist in the mouth. When patients are told that there are one hundred and forty-eight surfaces on the teeth, upon each of which a cavity can form, they seem incredulous, but it can easily be explained to them and the necessity of keeping each surface clean can be made apparent.

Method to Convert Round Burs into Inverted Cone Burs.—Every dentist of any experience has in his case a great many worn-out burs. If he will take his old round burs to his laboratory lathe upon which is mounted a true stone and grind them down to about one-half the depth of bur he will find he has a splendid cutting inverted cone bur, which, when it becomes dull, can be sharpened in a minute by regrinding a little. These burs are fine for removing amalgam fillings, opening up and extending

fissures, as well as for obtaining retention for fillings. The grinding should be carefully done so as to have the surface ground flat and at right angles to the shaft. It will take but a few minutes to try this and you will be pleased with the result.

W. H. HERSH, Chicago.

Mummifying Paste where Pulp is to be Removed.—In cases where the pulp has been destroyed by arsenic and is too sensitive to be removed at once, the following paste can be applied to the pulp and the patient dismissed for a period of three or four weeks. The pulp can then be removed in one hard piece.

Alum des.....	} āā, equal parts.
Thymol.....	
Paraform.....	
Iodoform.....	
Glycerine.....	
Zn. oxide.....	q. s., to make stiff paste.

After the pulp is removed the canals are thoroughly antiseptic and can be filled at once. The above paste made into a creamy consistence with oil cassia is an excellent dressing for putrescent canals after first washing them out with pyrozone three per cent. This should be made fresh when wanted.

W. H. SCHOENING, Hilo, Hawaii.

Unnecessary Retention of Teeth.—There are many cases of retention of natural teeth, either by unwise advice of the dentist or by the persistence of the patient who does not realize the necessity for extraction. When the patient has reached the condition where an artificial denture is an absolute necessity, if the extraction of certain remaining teeth is essential to make the denture the most useful and comfortable, the dentist should advise their removal. Often the cuspids are the only teeth remaining and the dentist advises their retention to preserve the expression, but this can be restored if the operator knows how by making the artificial gum higher and fuller over the cuspids than elsewhere. By allowing the natural teeth to remain the result is a weak denture and one that is not as firm as where the plate encloses the entire ridge. The recession of the gum from the necks of the cuspid teeth renders it difficult, if not impossible, to harmonize the artificial with the natural gum in such cases.

L. P. HASKELL, Chicago.

Painless Method of Removing a Congested Pulp.—The public is making a serious demand on our profession for "painless dentistry." I mean by this that our patients expect dental operations to be practically painless. By keeping abreast with modern dental therapy we can partially, at least, meet this demand, and there is no drug which will serve us better in this regard than cocaine where properly used. Better results can be obtained in removing a congested pulp from an anterior tooth, by using cocaine crystals in the powdered form. The cavity should be dried thoroughly and partially filled with powdered cocaine. The pulp can now be punctured with a sharp instrument, letting the serum into the cavity where it becomes saturated with the powdered cocaine, and by pressure can be forced back into the pulp tissue thoroughly anesthetizing it. When anesthetized in this way it can always be removed without the least pain. If the hemorrhage is not too profuse it is best to dry the canal and fill at once, care being taken to use sterile instruments; practically no soreness follows.

J. P. BUCKLEY, Chicago.

Partial Lower Plates.—In making partial lower sets, where only the incisors and cuspids remain, and such cases are quite too common, it is extremely desirable to perfectly fit the plate to the lingual surfaces of the teeth. First get a plaster impression and obtain model with investment compound. When thoroughly hard burnish platinum foil, No. 1-1000, on the lingual surfaces, allowing the foil to extend around and partially cover the labial sides of the cuspids. Burnish as carefully as you would for an inlay, using punk, cotton and thin blade and ball burnishers. Flow over this foil (without removing it from the model or investment) clasp gold. Cut this in small pieces, and it will be easily distributed evenly with the blowpipe. Now trim, place in the mouth and take impression of the whole. Put the metal into impression carefully, and it then becomes a part of the model. Now proceed to make dies, and swage over stiffener. Then remove stiffener from the model, place in the mouth with plate over it, secure with plaster, remove together, and solder. Perfect fitting clasps can also be made in the same way.

E. J. PERRY, Chicago.

MEMORANDA.

Do not fail to remember the Odontographic clinic next February. It is time to begin to get ready for it. Remember—February 16-17, 1903.

CORRECTION.

On page 851, first line in DENTAL REVIEW, October number, "resin 2 oz.," should read "resin 2 drachms."

I presume I contributed to the mistake by failing to note the same while reading the proof.

Very truly yours,

A. C. HEWETT.

HONORARY MEMBER.

At a recent meeting of the Swedish Dental Society, Dr. A. W. Harlan was elected as an honorary member of the society. We are pleased to see such evidences as this of the fraternal relationship existing between the profession abroad and at home.

NORTHERN ILLINOIS DENTAL SOCIETY.

The following officers for the ensuing year were elected at the recent meeting at Rockford: President, Dr. F. T. Bell, Aurora; vice-president, Dr. W. T. Reeves, Chicago; secretary, Dr. A. M. Harrison, Rockford; treasurer, Dr. M. R. Harned, Rockford. Executive committee: Drs. A. W. McCandless, C. L. Snyder and E. H. Allen.

ILLINOIS STATE DENTAL SOCIETY.

You have probably received a question card from the chairman of the executive committee, Dr. C. J. Sowle, for your convenience in jotting down questions to be discussed at the next annual meeting. Do not throw these cards aside but fill them full of questions and send them to Dr. Sowle by March 1, 1903. This promises to be a useful feature of the meeting.

FIRST DISTRICT DENTAL SOCIETY OF ILLINOIS.

At the twentieth annual meeting of the First District Dental Society of Illinois, held at Rock Island, September 23-24, the following officers were elected for the ensuing year: President, Claude B. Warner, Avon; vice-president, A. I. Sargent, Galesburg; secretary, H. W. McMillan, Roseville; treasurer, L. W. Skidmore, Moline. The next annual meeting will be held in Macomb.

INSTITUTE OF DENTAL PEDAGOGICS.

The next meeting of the Institute of Dental Pedagogics will be held at the Palmer House, Chicago, December 29, 30, 31. An unusually interesting program has been arranged and a cordial invitation to all who are interested in dental education is hereby extended to attend this meeting.

HART J. GOSLEE, *President.*

H. B. TILESTON, *Sec'y and Treas.*

THE HARTFORD DENTAL SOCIETY.

The Hartford Dental Society at its annual meeting on the evening of Monday, October 13, 1902, elected the following officers: President, Dr. J. Warren Harper; vice-president, Dr. Edward Eberle; treasurer, Dr. E. R. Whitford; secretary, Dr. A. W. Cowee; librarian and curator, Dr. F. D. Clark. Executive committee: Dr. E. B. Abbey, chairman; Dr. T. K. Starr, Dr. A. E. Cary.

COLORADO STATE BOARD OF DENTAL EXAMINERS. .

The Board of Dental Examiners of the State of Colorado, will meet in Denver, Colo., Tuesday, December 2, 1902, at 9 A. M., for examination of applicants for license to practice dentistry in Colorado. In addition to written and oral examination, applicants must supply their own patients, instruments and materials, and come prepared to do practical work under the supervision of the board, which will pass upon suitable selection of cavities.

All applications must be completed prior to December 2.

For application blanks and information, address

H. F. HOFFMAN, *Secretary*,
611 California Bldg., Denver, Colo.

DINNER TO THE STATE BOARD OF DENTAL EXAMINERS.

On the evening of October 18 the dentists of Chicago tendered an informal dinner to the board, congratulating them upon the work accomplished by them since their appointment. It was a very successful affair in every particular, showing good fellowship and appreciation on the part of those assembled, and proving beyond a doubt that the better element of the dental profession is more united than ever before in the furtherance of all worthy objects. There were many visitors present from other parts of the State, and even from other States. The toast list was too long to reproduce here, but there were many memorable speeches made, showing that the profession of this State is fully alive to the necessities of the day, and anxious to rectify any existing evils as fast as they arise.

CHICAGO, Oct. 28, 1902.

EDITOR DENTAL REVIEW:

You will call to mind that a few years ago I advocated a method of anchoring gold fillings in incisors, which was original with myself, viz., by cutting a dovetail groove across the lingual plate of enamel.

Considerable adverse criticism was made at the time, but I have just had occasion to examine a gold filling which I inserted in 1895. It was anchored by this method, and to-day I found the filling in perfect condition, no signs of leaking or failure in any way. This is the first opportunity I have had for examining the filling since I put it in. Of course I am much pleased, and the readers of the DENTAL REVIEW may possibly take some interest in the case, and in the method.

Sincerely and fraternally,

H. A. CROSS.

PATENTS RECENTLY GRANTED OF INTEREST TO DENTISTS.

709,410. Dental bridge work, John L. Kelly, St. Paul, Minn.

709,049. Machine for forming and drying toothpicks, Charles F. Scamman, deceased, Portland, Me., T. L. Scamman, administratrix.

709,050. Machine for drying toothpicks, Charles F. Scamman, deceased, Portland, Me., T. L. Scamman, administratrix.

709,812. Dental mouth mirror, George S. Bennett and J. W. Thatcher, San Francisco, Cal.

709,834. Dental gauge, Clarence R. Vanderpool, Grand Rapids, Mich.

709,973. Dental apparatus, Lucien Eilertsen, Paris, France.

709,927. Toothbrush and powder cabinet, Corwin T. Brice, Washington, D. C.

710,306. Rubber damholder, George W. Todd, Elmwood, Omaha, Neb.

710,444. Means for attaching tooth members, Willis H. Dwight, Lemars, Iowa.

710,498. Toothpick, Dow McClain, Kansas City, Kan.

710,638. Dental cuspidor, Joseph E. Van Nostran, Canton, Ohio.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Bldg., Washington, D. C.

THE DENTAL REVIEW.

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No. 12

ORIGINAL COMMUNICATIONS.

COLORS IN OIL—THEIR PRACTICAL USE IN PORCELAIN WORK.

BY ROBERT BREWSTER, CHICAGO, ILL.

It is not within the province of this short paper to discuss the subject of color—in relation to porcelain—in all its varied aspects, but rather to deal with its practical application to our everyday needs.

Porcelain in dental prosthesis at the hands of skillful manipulators already rivals in usefulness, and excels in beauty, the more generally used and time-honored metal. But with a fuller comprehension of the valuable properties of porcelain and of its possibilities will come its more general adoption.

It has been said that its possibilities are limited only by the ability of the operator; in other and familiar words, that it's "the man behind the gun." Although this is true in many respects, as is evidenced by ocular demonstration both in inlay work and bridge work, yet the artistic sense cannot be fully developed without the requisite materials and a knowledge of their use.

We are but on the threshold of artistic dentistry, artistic in the sense that utility—in the restoration of lost organs or lost tissue—is being governed more and more by esthetic considerations. The work of Dr. Rudolph Beck in restoring facial expression (in connection with artificial dentures) by means of paraffin is an illustration in one direction; the adoption of porcelain for restoring lost tooth structure is another, and the employment of oil colors as an aid in obtaining more natural effects in all classes of prosthetic work is a still further evidence of this view.

The "foundation body" and "enamel body," with its large variety of natural coloring (twenty-seven shades), has done much toward rendering porcelain work in its higher requirements possible. But with the addition of properly prepared high-fusing colors in oil the "porcelain artist" takes a step forward, and we then see effects which astonish us in their close imitation of nature.

In treating the subject of this paper the coloring will be divided under two heads, "overlaying," which means the application of color to a practically finished surface, and "underlaying," by which is understood the coloring of a surface afterward to be covered with the "enamel body."

Overlaying.—Under this term is included darkening the shade of laterals and cuspids in a set of six anterior teeth to agree with conditions found in nature. Darkening or changing the color of plate facings, whether for use in porcelain work or gold bridge work. Staining porcelain crowns at the cervical and upon the occlusal to correspond with similar markings on the adjoining natural teeth; this includes the representation of tobacco-stained teeth, Hutchinson teeth, etc.

When a crown is indicated in an arch composed of teeth with defective enamel, presenting grooves and pits, the usual plan is to take a facing and cut the required markings into its surface with a diamond drill, but however well this may be done, the effect is not very natural. A better plan is to make the crown entirely of body, using the "foundation body" for about two-thirds the bulk and *well fusing it to secure a sound attachment*, then covering, building up and contouring with "enamel body." Whilst this body is in the soft state—that is, before baking—the finest lines may be produced with carving tool and small brush, and there will be an entire absence of that mechanical appearance in the pits and grooves inevitable when drills are used upon a hard substance.

Darkening the laterals and cuspids in a set of six teeth demands quite a little skill, owing to the necessity for retaining the same *tone* of coloring throughout the set; for although the laterals may be three shades darker than the centrals, and the cuspids three shades darker than the laterals, the difference must be one of intensity of color only, and not of tint. A few experiments in color mixing are necessary to familiarize oneself with the processes involved.

As a practical illustration of the process we will take a set of fourteen teeth, say shade 5 on the Justi shade guide. As pur-

chased, the set presents a uniform color from centrals to molars, and is known as a yellow shade. The *tone* of color pervading the upper half of this set will be reproduced by mixing equal parts of yellow and brown; the method of employing them is as follows: Place on one of the pallets an equal quantity of each color, sufficient in all to paint twelve teeth on their labial and buccal surfaces (the exact quantity of color can only be determined by experience), then drop from the pipette some of the prepared oil on to the pallet and with the spatula incorporate thoroughly. It is important that the color and oil be worked thoroughly together until quite smooth and the colors perfectly mixed. The consistency of the color when mixed should be about that of cold glycerine or the fluid of a good oxyphosphate cement.

The color being now in the right condition, it must be applied to the tooth with a patting motion, not brushed on as one would apply color to canvas. In thus applying the color an evenness of surface is obtained and an extra thickness left at the neck, becoming thinner toward the center of tooth. To obtain the blended effect found in a well-shaded tooth, the color must be thinner as the cutting edge is approached. To secure this effect dip the brush into the jar of oil of turpentine, with this oiled brush draw a little of the already mixed color to one side of the pallet. The color thus thinned down will allow of its being applied in the thinnest possible film over the remainder of tooth, even to the extreme cutting edge if desired. Sufficient color should be applied to the two laterals to make them perceptibly darker than the centrals, and to the cuspids to make them still darker; the color on the cuspids should be brought nearer to their cutting edges. The bicuspid and the molars should be darkened to agree with the cuspids; the occlusal surfaces may be painted in the sulci with a brownish stain, and the ground cusps (if any) with a color which will restore their original appearance and smooth surface.

A perusal of Dr. Royce's paper (DENTAL REVIEW) on "The Shades of Natural Teeth" is recommended in this connection.

The most difficult teeth to change are those with very little color in them, such, for instance, as No. 8 on the Justi guide or No. 35, the corresponding color, on the White's guide. The formula for the upper third of this tooth would be brown, two parts; yellow, one and one-half parts, and white, one part. These colors must be thoroughly incorporated, as previously directed.

A simple method of arriving at these proportions is to make heaps of each color on the pallet. After a little experience this method becomes sufficiently practical for all purposes, but if preferred, each color may be weighed to a previously prepared table, and doubtless this plan will be adopted by many at first, to be afterward discarded as their artistic abilities develop.

The formula for darkening the upper part of a tooth the color of No. 48 on the White's guide would be brown, three parts; yellow, one part; red, one part; black, a trace. This will give the *tone* of color desired; the intensity is governed by the thickness of the layer of color applied.

On entering this work it is a good plan to make up mixtures and paint on pieces of porcelain or old teeth, recording the proportions, and after baking, compare with teeth on the shade guides, remembering always that in comparing a sample with the neck of a tooth—to ascertain whether the correct *tone* of color has been reached—that only the same amount of each must be exposed to view, otherwise the eye is liable to be deceived by the shading in the baked tooth.

The illustrations given are sufficient to indicate the possibilities in the way of "overlaying." We will now consider the method of "*Underlying*" and its field of usefulness.

It is not uncommon, when selecting facings for porcelain work, to find one exactly right in size and shape and color of neck, but needing some change toward the cutting edge. It may be that the blue at cutting edge is either too dark or too light. In the former case reduce the thickness of the lower third of the tooth by grinding at the back, then paint on some white color (mixed with oil as previously described) and bake; then apply the "enamel body" of the desired tint in finishing the crown. If, on the other hand, the blue is too light, reduce the thickness of tooth a little by grinding and paint on blue color in a good, thick layer; for if the point has been darkened too much the excess of the blue may be ground off before the "enamel body" is added.

The same method applies to yellow, brown or gray pointed teeth. To darken a gray point, black should be used. In all cases the single color will be sufficient, except, perhaps, in the case of a very pronounced brown, when the addition of a little red to the brown color will be beneficial.

In matching an adjoining natural tooth, it is sometimes necessary to show in the facing a line of blue just above the cutting edge. If the facing is thick, grind a slight groove or depression on the back and paint in the blue color. The depression will fill up with the "enamel body" in constructing the crown. If brown spots are desired and a facing must be used, these are better painted on the face of the tooth with a very small quantity of color of the proper tint. To reproduce in a facing the opaque white spots associated with defective enamel, the labial surface must be ground into and white color painted into the depression and baked, the surface afterward leveled with enamel body of the proper tint to correspond with that particular portion of the tooth.

We now come to the employment of these oil colors in inlay work. Inlays are the severest test for porcelain. No more difficult task presents itself to the operator than the accurate matching of the mesial or distal surface of an incisor involving its cutting edge, especially so if the tooth is of a pearly white, translucent character. In the majority of such cases the "enamel body"—especially when employed on Dr. Reeve's method—will give beautiful results, but there are cases where our best efforts seem to fall short of perfection, and it is just with such teeth as mentioned that our greatest difficulties arise and where oil colors prove of much assistance.

We will take as an illustration a tooth of the character just referred to; the procedure would be to line the matrix with white "foundation body" and bake, then contour out as needed and bake again, then paint it over with white color and bake; afterward apply the "enamel body," either the "A," "B" or "XX," to the fulness required. The "foundation body" alone, covered with either of the numbers mentioned, will make an exceedingly light colored inlay, but a still whiter effect is obtained by using the white oil color under the coating of "enamel body."

The satisfaction derived from making an accurate match in such teeth is well worth the trouble involved in reaching such a degree of manipulative excellence.

When brown or white spots are desired in any portion of an inlay they should be painted immediately under the last layer of "enamel body." The color must always be baked where painted before the covering of body is applied, and in no case should porcelain be ground with a carborundum wheel or any of its imitations;

good corundum is the only thing to use, excepting, of course, the diamond.

One other feature of oil coloring still remains to be mentioned, viz., the pink gum effect which is better attained by painting than by the other method of laying on a one colored body mixed with water. In the latter case, bulk is increased and artistic effects of light and shade are difficult, if not impossible of accomplishment. On the other hand, with oil colors in two shades of pink, various tints of gum may be more accurately matched, and scope is given for the display of artistic work in shading to break up that monotony of color which is noticeable even in pink gum enamel. Cases will be found in practice where the employment of a small quantity of pink color is oftentimes very desirable, especially so when no addition is made to the bulk of the case.

From what has been shown, it is evident that with materials as now prepared, those desiring to achieve excellence in this department of dentistry have much to assist them.

STATUS OF DENTISTRY.*

BY B. HOLLY SMITH, M. D., D. D. S., BALTIMORE, MD.

The denial on the part of the medical profession of responsibility, not only for the birth of dentistry, but for its conduct and progress, forced our professional forefathers into the anomalous position of which Topsy stood confessed, an absence of parentage; like Topsy, dentistry of that day just "grewed." But as time has worn away the antagonisms and resentments of that early period, we can see dispassionately that we are like Paul, debtor both to the Greek and the barbarian; to medicine, with all its ancient traditions and assumption of authority, and to the various branches of mechanics and arts which have fostered and developed metallurgy and general manual dexterity.

May it not be profitable to-day to examine into the state of health and sources of vitality of this youth who has given promise of that virility so often found in the illegitimate, and to inquire into the expediency (now that we have in part lived down the shame (?) of our early years) of accepting the parental overtures of the medical profession, and by changing our name inherit the respectable estate and honorable title of M. D.?

*Read before the American Dental Society of Europe, August, 1902.

It is a well-known fact that nearly if not all the men instrumental in the establishment of the degree of D. D. S. were medically educated, if not the proud possessors of the medical degree. They brought to the training of the dentist minds well stored with a knowledge of the anatomy, pathology, therapeutics and surgery of their day, with the advantage in their interpretation that always accrues to the one who is accustomed to doing things with his hands. In many instances these men were linguists and scholars, translating and adapting for dental uses important treatises on surgery and therapeutics. Unquestionably this had the advantage of profoundly impressing the beginners with a wholesome respect for the dignity of the new profession. The rapid improvement in methods of practice was but a natural consequence of the régime which substituted clinics for the closed laboratory door, the college with its attendant courses of lectures for the unsatisfactory system of pupilage, the dental society and dental journal for churlish, unsociability and secrecy.

Reviewing the history of these cognate influences for the establishment of our young profession, it is a striking evidence of the vitality of the movement that while error and ignorance are often apparent, there is also abundant evidence of marked ability and untiring energy. Prejudice and secrecy were met with a candid and scientific demonstration of principles, and it is not unreasonable to say that without the aid of precedent and with very little if any encouragement from the profession of medicine, the progress of dentistry in the early days was quite as rapid and gave quite as much evidence of the scientific, artistic and ethical spirit as was to be found in any profession of that era. Later dentistry far outstripped medicine in improvements of methods of practice and adaptation of arts in the alleviation of oral ills. For a long time medicine did not recognize either the lusty and vigorous growth of this youngster or take advantage of the improved methods of treatment. In fact, it is only of very late years that medical men have openly acknowledged the authority of the dentist over his special field or been willing to profit by his superior skill and knowledge in surgery and therapeutics in that field. That this concession finally has been made, and made for all time, there is now no question.

As this brief review of the beginnings of professional dentistry finds us in America, it should not be uninteresting to state what is

the condition of affairs in American dentistry to-day. Most of us know the existing conditions, but let us think them over together, examine into their causes and see if they deserve to be perpetuated, or even if they may serve as a satisfactory foundation upon which to build the ideal organized dentistry for to-morrow.

It is doubtful whether it is to be considered fair without some involvement of the very recent past to hold dentistry up at the point of a gun, as it were, and demand its status. The answer, if honest, might be like that of the youth who, asked for his age, replied he was thirteen at home, fourteen at school and eleven on the cars. If we can get at some such shifting, though approximate, scale, let us be satisfied.

The degree of D. D. S. is not possessed by all of the creditable practitioners of dentistry in America. Some of the older ones have the M. D., quite a respectable minority that of more recent origin, D. M. D., but the bulk of practitioners claim their right to practice because of their D. D. S. While many of these have in addition the M. D., the special degree is the authoritative one, as few of the M. D.'s do more than practice their dental specialty, leaving, as do other specialists, the treatment of conditions outside their immediate field to the general practitioner or other specialist. In fact, even though the dentist has the medical degree, he cannot prescribe for ailments outside his special field unless he has conformed with the law of his State by registering, which often requires him to pass an examination before a Board of Medical Examiners. All, therefore, are driven to the acceptance of the rights and privileges conferred upon the D. D. S., and while these appear to have been ample, some few aspiring ones, restless of possible infringement and jealous lest honor and dignity be denied them, have contended for the right of the dentist to practice all the specialties and general medicine included; indeed, they have advocated spurning the special degree with its limited privileges and the substitution of the M. D., with all its wealth of opportunities for excursions upon the various surfaces and into the many orifices of the human body.

The newspapers report Mr. J. Pierpont Morgan to have replied to some visionary aeronaut, who desired his assistance in the establishment of a line of airships to the moon, that this earth is quite enough for him, and so we say to the excursionist in dentistry who attempts to discredit the D. D. S., the field of practice is sufficient and the authority ample, both at home and abroad.

The American M. D. has no advantage in foreign lands over the D. D. S. and at home the medical profession has adopted restrictions identical with those of dentistry. Its associations of faculties and examiners and their degree, if reputable, entitles the holder to be examined for the right to practice, ours does no more, no less. Their most thorough practitioners do not attempt to practice dentistry, nor is there time nor opportunity for us to practice general medicine. More than this, there is no degree which could be secured in any reasonable time, purporting to qualify the holder to practice general medicine and dentistry, which would not soon be discredited by both medical and dental men. Again, there is no specialist, however broadly trained in general medicine, who, following assiduously any specialty, can keep up with the changes in general practice or improvements in the technique of general medicine. We therefore fail to see the force of the arguments of those who contend for a change or the advantages to be gained by such a course.

The special degree only stands for the special training, and any one who is familiar with the training of the student in the average medical college or is acquainted with the meager knowledge of oral conditions and diseases which such student has when he is graduated must recognize the necessity for this special training. Experience teaches that the medical graduate who essays to study dentistry makes often a comparatively poor showing in the mechanical part of his course. There is more than one reason for this, but the advantages which students have in the theoretical branches are often overbalanced by their lack of manual skill and their ultimate success is not at all commensurate with the time and labor spent.

America stands foremost in the world to-day in the domain of mechanical arts, and American dentistry, through its kinship with them, may fairly claim part of this supremacy. The peculiar life incident to a new country like ours, enforced upon its youth a familiarity with mechanics, or rather the way to do things with their hands, that has in the past lessened the necessity for emphasis upon the importance of special training of the motor centers. Now, however, that the field of education is broadening and deepening, and an increased number of years required in general educational work, it behooves our profession to look well to its interests, lest our one-time expertness in the use of tools and general manual excellence be lost or crowded out.

Boys expecting to enter our profession should receive manual training between the ages of twelve and twenty, if they are to develop a skill commensurate with that of their dental forefathers. With such testimony as educators everywhere bear not only to the value of manual training as a preliminary to special study, but to the benefit to be derived from it in broadening the comprehension, giving students the power of taking hold of questions at the right point, and by developing the motor centers of the brain and coördinating the movements of hands and body, thereby creating a more symmetrical and better rounded man—I say with these things proven there is no force in the contention that specializing in preliminary work tends to narrow the individual. There is no reason, either, why manual training need displace any other necessary branch, as the testimony is convincing that in institutions where its pursuit has been optional the students taking it did as well as or better in other studies than those who declined it. Such institutions are being multiplied, showing both popular demand and a willingness on the part of educators to satisfy and encourage it.

The questions at issue between the rival camps in the dental field to-day seem to be: "Shall the scope of dental practice be changed? Do we regard dentistry as it is most successfully practiced to-day as failing to measure up to its opportunity? Are we to undertake any change that will abolish the necessity for manual dexterity?" Our practice in the main is surgical rather than medical. There may be an opportunity for specialism along the line of application of medicaments to oral lesions, but the average practitioner does not have enough practice in the application of general medicine to diseases of the mouth to become proficient in it. Dependence must therefore be placed in the practice and traditions of specialists, or patients must be referred to the specialist. Instance the treatment of such diseases as pyorrhoea alveolaris; the principal success attendant upon its treatment results from the skill and dexterity with which the surgical portion is accomplished. So in diseases incident to the apical space, frequent medication does more harm than good, and the advantage of the modern treatment lies in the fact that surgery has been substituted for medicine. The success or failure of the dentist to-day, and the measure of his usefulness to the world at large, depend chiefly upon his ability or lack of it to practice the art of dentistry, and to train him to do this requires a course of pupilage unlike that

which is required for any other calling and quite distinct from that of medicine.

There is no reason why students preparing to begin the study of dentistry should not approach it armed with an academic degree, conferred by an institution in which manual training, physics, metallurgy, chemistry and laboratory work form a part of the curriculum. It is only necessary for the profession to decide how much of these is necessary or desirable. When the ideal course is determined institutions will be found in which such a course can be pursued. No experienced dental teacher has failed to be struck with the almost hopeless confusion of the freshman student. He spends much of his first year in making excursions into the various branches of study, appalled, overawed and totally at a loss to know how to begin. His time is lost because he does not know how to approach his work, while a student with the preliminary training indicated would possess decided advantages. A saving of time is accomplished thus, and with the ever-increasing demands the tendency of to-day is for the young man to begin his life work at too advanced an age, especially should he attempt post-graduate work after he has secured his degree.

If the men of our profession are to accomplish anything in the line of original research it must be hoped for through post-graduate work and study. The preliminary and special training can but be the introduction to this.

The special training given in our best dental colleges seems to be measurably satisfactory. The goads which are being applied constantly to the teaching institutions by the National Association of Dental Faculties and the Boards of Examiners, may be depended upon to keep them abreast of the times in their instruction and equipment, but the matter of preliminary and post-graduate work needs our encouragement. The future rank of the dentist among scientific men will depend upon the aid the profession is willing to give before and subsequent to their special training.

Is it too much to hope that in these ringing times of progress our specialty may strengthen its boundaries, equip itself with every advantage and perfect its work, whatever its scope, rather than with dreamy eyes and envious vision neglect the present for the doubtful hereafter?

PORCELAIN ENAMEL.*

BY N. S. JENKINS, D. D. S., DRESDEN.

It appears to be my fate to come before this society each year to present the same subject in its continued development and with ever new insistence upon its importance. To be sure, the revolution which porcelain enamel has already made in the practice of many of us is unquestionable. Almost all of us and many of our colleagues, especially in Germany, have learned the value of this system for other purposes than mere cosmetic effects. The unexampled strength of this material, its indestructibility under any ordinary conditions and its seemingly unlimited range of application has been made plain to nearly every candid mind. Still, notwithstanding so much is already known of the advantages of porcelain work, there remains, and it is right that there should remain, a vast mass of conservatism which hesitates to completely accept the new methods and continues to place its trust chiefly in gold. Saint-Saens says: "Intellectually man is an animal that loves the night, or at least the dusk; light frightens him, he must become accustomed to it gradually." From Harvey and Jenner to Darwin and Lister, and from the fathers of dentistry to Black and Miller, the new light has often had to struggle long before the darkness comprehended it. So far as it does not arise from mental dullness this conservatism is commendable. It is well to "hold fast that which is good," but it is none the less the duty of those who have found a better way to "cry aloud and spare not" until the new light prevails.

Once more, then, let me reiterate what is claimed for the new method. Any good operator who has mastered this system can produce esthetic results which before were impossible. He can take a mouth disfigured by decay and fracture and restore it to beauty of form and color so perfectly that the very art of restoration is concealed. He can preserve to years of usefulness frail teeth which would otherwise have to be crowned. He can make crowns of unexampled strength and beauty in well-nigh hopeless situations. He can obtain perfect cervical margins and proximal contours unknown to the most skillful workers of gold, and with a comfort to his patient which excites the warmest gratitude. He can materially

*Read before the American Dental Society of Europe, August, 1902.

increase his income by operations so superior that patients gladly pay the higher fees which this class of work necessitates, and in the conquest and practice of this system he is elevating his profession until it assumes to him and to his patients a new dignity and a hitherto unknown usefulness.

The most strenuous objectors are those who have had the least personal experience or the smallest opportunity for observation. I have been often entertained at the complaisant manner in which I have been assured by colleagues whose acquaintance with porcelain restorations was purely theoretical that it was either impossible to make such operations as experts are constantly making in their daily practice, or else that when once made they could by no possibility withstand the force of mastication or permanently preserve the teeth.

Many of you will remember that I had the honor to present, two years ago at the International Congress in Paris, a patient for whom I had made over thirty restorations with porcelain enamel. This patient, who is at the same time an esteemed colleague, has been so good as to come to Stockholm that you might again have the opportunity to inspect his teeth and judge for yourselves if this work is practical. You will observe that many of these restorations have been made upon crowns so frail that they could have been filled in no other manner with any chance of success. Nearly all of the fillings on the masticating surfaces have been ground to occlusion and subsequently polished. Three accidents have occurred. In the right lower third molar a mesial filling, which was made under circumstances which caused it from the first to be an object of suspicion, fell out and was replaced by a more perfect substitute. The distal filling in the left lower first bicuspid has been dislodged by fracture of the frail walls of the tooth and has been replaced by a new filling firmly anchored into its mesial neighbor. The distal filling in the left upper second bicuspid has broken. This may have come from carelessness in cooling. Possibly it was plunged into cold water too soon after being melted, for this will cause slight cracks, which, if the light is poor, may escape observation, or it may have been injured by the careless use of the diamond disk in grooving. Only one new operation has been necessitated; the right upper central incisor, having decayed in the root on the labial surface, has been recently filled with gum-colored porcelain.

The use of the gold matrix is not always understood. With gold foil number thirty, carefully packed, the edges well bur-nished and the matrix gently removed there remains practically no space between the finished inlay and the edges of the cavity. As an illustration of this fact, I beg to call your attention to the left upper first molar. The large contour filling in this tooth was originally flush with the grinding surface. Through mastication the tooth has worn away, leaving the filling projecting beyond the present surface of the tooth. Please examine the joint with care and see if the edges do not indicate perfect contact.

And now I approach a subject upon which I touch with a certain embarrassment. Some of you will remember that the distinguished Dr. Joseph Head, who has done so much to advance the cause of porcelain work and whose technical skill and many intellectual accomplishments have made his name a household word amongst us, made, for this patient in Paris two years ago, a mesial filling of high fusing porcelain on the left upper first bicuspid. This was to be considered a test case, and when it was completed Dr. Head remarked: "That is the best I can do; I stand or fall by that." You will observe that this is the only porcelain filling in the whole mouth which shows signs of discoloration, a result which I ventured to prophesy when the proximal surface was ground to bring it into place, because of its porosity. If such results can obtain from the hand of such a master, the fault lies wholly in the material. I look with admiration and amazement upon the success wrought by such men as Head and Capon with such intractable materials as the platinum matrix and high-fusing body, and can therefore believe that, when they have once been converted to the easier and more certain method and the superior body, there will be no limit to their achievements.

And now I beg to refer briefly to a use of porcelain enamel which has hitherto had less prominence than its use for fillings, since it was primarily designed for inlays and its adaptability to other purposes has consequently been less dwelt upon. I refer to pivot teeth. No hypothetical cases are presented to you, but only a few duplicates of practical work, the originals of which are doing perfect service in the mouth. They are representatives of my daily practice, and I contend that for strength, cleanliness, beauty and adaptability these methods are unapproachable.

It may interest you to know something of the detail of this work. After the root has been prepared (great care being taken in shaping the sides of the root, that it is well-defined and presents no undercuts) an impression is taken with a piece of Stents, only one point of which has been softened in the flame. This is carried against the root, and a clear, sharp impression is obtained. A model is then made, sufficient plaster cut away to carry the band so far as desired under the gum, a die cast and both cap and band of pure platinum is then swaged in one piece. A perfect fit is thus obtained without the pain and discomfort to the patient which is usually attendant upon measuring the root with a wire or fitting a band beneath an irritated gum. The platinum cap is then perforated for the pivot and, after soldering, the bite is obtained and the tooth selected. When ground to position the tooth is soldered with pure gold to the pivot, or, sometimes in a close bite, to the cap itself. At this stage the work can again be tried in the mouth, if desired, to make sure that everything is in order, and then the porcelain enamel is used to unite the tooth, pivot and cap into a solid mass. This latter is an operation which requires great self-control, for porcelain enamel has the defects of its qualities. It was my object to produce a material which should possess unexampled strength and, to gain this end, as well as certain others, I was obliged to reduce the infusible elements to the exact minimum essential to contour. It can, therefore, be melted to a degree of hardness which will cause it to crack when combined with artificial teeth. To prevent cracking it is necessary to make the first three meltings (four are usually requisite) almost like the "biscuit" recommended in high-fusing work, but a trifle nearer to solidity, to avoid the porosity which constitutes the most serious defect in high-fusing porcelain. Then the last melting may be more thorough, but it must still stop short of the highest possible density, a degree desirable in an inlay and unobjectionable in melting upon platinum alone. When this degree of skill has been obtained the result is beyond measure satisfactory. As an example of one advantage: By flowing the porcelain enamel over portions of the platinum band it becomes not only concealed from view, but it also obtains greater rigidity. Examine the lower bicuspid crown, which is a duplicate of one which replaced a tooth erupted outside the arch, and tell me if in any other way it could have been so well restored to correct position, to beauty

and to usefulness. What possible gold work can equal in strength the central and lateral incisor supported by the central root alone? This case has been set in pink gutta-percha in order that it can be easily removed should there be more absorption of the gum about the lateral; for more gum-colored porcelain enamel can then be readily added at a single sitting.

Among these various examples of the practical application of porcelain enamel I have great pleasure in showing you some of Dr. Ottolengui's models for preparing a cavity with a groove, like the lid of a box. Through this method the matrix can be removed only in one direction, an operation which requires much delicacy of touch, but the successful accomplishment of which gives an inlay which is not dependent upon cement alone for security of anchorage.

In conclusion permit me to say that the practical work which I have had the honor to present to you is the clearest evidence of the value of the methods and material which have been evolved through many years of unremitting thought and labor, upon original lines and in a spirit of scrupulous and logical exactitude.

INLAYS VERSUS GOLD FILLINGS.*

BY J. W. WASSALL, M. D., D. D. S., CHICAGO, ILL.

The conventional method of restoring lost tooth structure by gold or plastic filling materials is doomed to fall into disuse. There is upon us a decided tendency to depart from the classic methods, adopting in their stead some material fastened into the cavity with cement.

It is the purpose of this paper to discuss the relative merits of the old and new procedure in an effort to reach a definite conclusion as to the advantages, if any, of the newer method.

What are the requisites of the ideal filling? They may be enumerated as follows:

1. Immunity to recurrence of caries.
2. Ability to withstand mechanical force.
3. Ability to withstand chemical action.
4. Nonconductivity of thermal changes.
5. Compatibility with vital dentine.

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6. Harmonious color.
7. Minimum expenditure of time and labor in the operation.
8. Minimum production of pain to patient.

If we test the several varieties of fillings of common usage by the above requirements all are found wanting in varying degrees. Gold fillings, the sheet anchor of dental practice, the main reliance of the practitioner in his warfare against the arch enemy of the human teeth, the Alpha and Omega in the education of the dental student, is condemned on each count. The gold filling does not, as a rule, furnish immunity to recurrence of caries. Its fundamental defect is the joint between the filling and the cavity wall. This is invariably present. No matter with what skill the cavity be prepared or the gold placed and condensed, there is a measurable and demonstrable space between filling and wall. The influence of heat and cold upon the metal filling produces a continual widening and narrowing of this space. These expansions and contractions imbibe into the joint the fluids of the mouth, which in time produce new caries in the large majority of cases.

The testimony of experienced observers is to the effect that gold fillings, except when in locations where they are absolutely free from fermentative influences, offer no immunity to recurrence of caries.

Fillings of the amalgams are subject to the same danger of recurrence of caries, and to a greater degree, because the deficiencies mentioned as pertaining to gold are more obvious. Likewise the shrinkage which always accompanies crystallization of amalgams adds to the danger.

The oxyphosphate filling is the only filling material in which the vulnerable joint above mentioned does not obtain. The significance of this quality possessed by cements in their employment for the attachment of inlays is apparent. The value of the cements lies in the fact that decay does not again occur at the cavity margin. If there was one truth in all the lucubrations of the "New Departurists" worth remembering it was that in proportion as teeth needed saving cement was the best material to be employed. It was not claimed that the plastic fillings remained permanent, but that caries did not again occur at the margin.

Testing the ordinary filling operations under heading No. 2—namely, requisite hardness to withstand the force of occlusion and

mastication, all fillings show insufficiency. Gold fillings show wear and also change of form, owing to the high degree of malleability and ductility of pure gold. This change of form or yielding to pressure is most destructive to gold fillings situated in occluso-proximal cavities, because it causes the gold to bulge and project at the gingival margin, inviting destructive fermentation.

Under heading No. 3, resistance to chemical action, gold fillings stand the test. Although it is recognized that gold does occasionally tarnish, there is no practical loss of substance. All plastic fillings including amalgams are constantly subject to chemical action in the mouth, in some cases almost imperceptible, in many cases rapidly destructive.

Under heading No. 4, all metallic fillings are deficient inasmuch as they transmit thermal changes readily. The cements and gutta-percha stand this test, however, being nonconductors of heat and cold.

Under heading No. 5, all metallic fillings are, by nature of their composition, *persona non grata* to vital dentine. The material is so utterly dissimilar to living tooth structure that it is tolerated only. In sensitive teeth metals remain as an irritant sometimes for years. The cements and gutta-percha simulate to a considerable degree tooth tissue and may be classed as acceptable.

Under heading No. 6, color, both gold, or gold and platinum fillings, when visible, violate all the canons of good taste. The American public, who have excited the wonder of all countries of the world civilized and uncivilized with their gold mouths, have at last begun to realize how unsightly the disfigurement and to rebel. The hand-writing on the wall that this intolerable nuisance shall pass away, may now be plainly read. Gutta-percha and cement are less open to this criticism and have in the past enabled dentists to treat people with defective front teeth so that they were temporarily beautiful rather than permanently ugly.

Under headings No. 7 and 8 the preparation of a cavity for gold filling and the introduction of the foil in cases where most urgently needed, is accomplished at the expense of too much vital and nervous strength. The actual condition of surgical shock is frequently brought on. The public has been a long and patient sufferer in this respect. Modern appliances and methods have done much to alleviate, but large gold operations are still a trying ordeal. There

is a growing indisposition on the part of our patients to submit to the severe and prolonged operations for filling that the old masters of our art were accustomed to impose. The physical and moral strain upon the operator is likewise of tremendous import and an unjustifiable expenditure of his vital powers. The plastic fillings pass muster under these two headings.

If then the old filling methods are found wanting, does the inlaid porcelain filling offer a more perfect substitute? Let us try the cemented inlay method by the same tests as above.

Heading 1. Immunity to recurrence of decay—The inlaid filling was used in my own practice in an experimental fashion as far back as 1887. I have seen others made prior to that date. A certain number of these cases have been under my observation from time to time. These old inlays were very imperfectly fitted and made, but nevertheless, have fulfilled their office in a remarkable manner in spite of the above noted imperfections. It is observed in these cases that the cement joint has a peculiar protective quality. While the cement was washed away considerably the liability to decay seemed remarkably less than it would have been about a metallic filling made in the ordinary way. A number of my confrères have noticed the same peculiarity to be possessed by inlays made by themselves ten or more years ago which they have been able to keep under observation. Many of you present will, doubtless, be able to give corroborative testimony as to this fact. If this is a constant attribute of the cemented inlay, then is it a most valuable fact in science and another step forward in the march of human progress. It was an appreciation of this quality of the inlay rather than its esthetic qualities which induced the writer to take up inlay work again after long disuse. Fortunately inlay operations are now being done so extensively that time will soon demonstrate the value of their decay preventing properties. It must not be forgotten in estimating the value of cement that it has had a very thorough test for a quarter of a century in the attachment of artificial crowns,—conditions analogous to its use for attaching inlays.

Under heading 2, the material usually used for inlays, that is high fusing porcelain or gold solder, is abundantly hard for all mouth strain.

Under heading 3, the inlay stands perfect.

Under heading 4, nonconductivity of porcelain inlays is marked and a quality to which the patient gratefully testifies.

Under heading 5, the inlay of porcelain is much less open to objection than any material unless it be gutta-percha.

Under heading 6, color—the porcelain work is well nigh perfect. To many this is the only quality which warrants its use. The obtaining of a perfect match of color is largely a matter of personal equation in which some succeed better than others.

Under headings 7 and 8, the easier technique of inlay work is a boon to humanity and a marked lightening of the dentist's daily toil. There is no labor so arduous or exhausting as that of the conscientious gold filler. The operation for a large or small inlay filling is infinitely more humane, because the principal work for the preparation of a cavity for an inlay is upon the enamel and peripheral dentine, being the least vital part, while on the other hand the making of the gold filling involves cutting retaining points and anchorages in the most sensitive part of the tooth. In inlay work the time is lessened to both patient and operator. A large part of the work is done without the presence of the patient and by an assistant in the laboratory. The use of the rubber dam is obviated.

While there is a certain sameness in the results obtained by all who employ the inlay method of remedying the ravages of dental decay, the means to the end vary according to the peculiarities of the individual operating. It is therefore of value in arriving at a system or method of procedure which shall at the same time be facile, efficacious and uniform, for each to submit his own peculiar ideas for the general good. The writer in pursuance of this object will, therefore, briefly describe the method of making inlays as at present used. He hopes, however, to obtain many new ideas by conference with his confrères at this meeting.

Generally speaking there are two methods of making inlays, in one the platinum matrix is fitted to the prepared cavity in the mouth of the patient, in the other the platinum matrix is made upon a model of the cavity in the laboratory. The latter method is the one used by the writer. Parenthetically it may be stated that inlays are universally applicable to any carious part no matter how large or small the lesion or where located.

Material for inlays is either high fusing porcelain or gold solder, the latter is used only in locations where it will be ordinarily invisible and where tensile strength is specially indicated.

If the case be one on a proximal surface, a wide separation is previously obtained by waxed linen tape wedges, as recommended by the late Dr. Henry J. McKellops, of St. Louis, supplemented with sheet gutta-percha. This is a prerequisite to good operations, which in no case may be disregarded at the risk of having your best efforts frustrated or by rendering the patient forever miserable with the abomination of an abnormal interproximal space. From two to fourteen days may be required to obtain sufficient space to restore normal contour. Insufficiency of juxtaposing dental surfaces is too prevalent a fault in all filling operations. The preparation of the cavity for the impression begins with the disinfection of the field of operation, after which solid margins are reached with chisels in the usual way. The engine completes the preparation, first using small coarse spherical corundum points, the margins being polished with plug finishing burs or diamond points. The engine should be run at high speed and the points kept thoroughly and constantly washed with water at blood temperature, projected on the field of work in a free and steady stream by an assistant who likewise has charge of the ejector. It is remarkable how rapidly, how accurately, and with what celerity this step of the operation may be completed even for timid persons. Great care is to be taken to so shape the cavity that it will "draw." "Extension for prevention" may here be practiced to its maximum, its radical employment being productive of most beneficent results. Sharp projecting cusps, which exist by reason of deficient wear, should be reduced. The cavity is now isolated, dried and if in a tooth with living pulp wiped out with warmed 95 per cent carbolic acid for its disinfectant, coagulant and obtunding effects. If at this point it is seen that carious dentine remains, it should now be removed with spoon excavators, and the overhang caused thereby filled up with cement.

The cavity being prepared, the next step is to take an impression and bite in modeling compound to show in plaster the relation of adjoining and occluding tooth. This is to be used as a guide to the workmen in the laboratory in modeling the porcelain. This impression will also show the operator the general shape of the cavity and whether it requires any further modification before taking the cement impression which now follows.

If the impression for the working model requires no matrix the procedure is as follows: The field of operation is isolated by cotton

rolls or napkins, and the tooth and cavity is thoroughly rubbed with finely powdered talcum to prevent the cement impression from adhering. Oxyphosphate cement is mixed to the consistency of soft putty, it is rendered less sticky by rubbing a little talcum on its surface, and is at once pressed thoroughly into the cavity, enough excess being used to give a sharp, clear impression of the cavity margins and adjoining surfaces. The cement should be securely held in its position till set hard, when it may be removed.

If the cavity is such an one as requires the use of a matrix as on all proximating surfaces or side-occlusal surfaces, a piece of copper ribbon of suitable width and thickness may be chosen; for the front teeth this strip of copper should be five-eighths of an inch long by three-sixteenths of an inch wide, one end being bent at right angles. It is used by being placed between the teeth, the short angle lying upon the labial surface of the tooth in which the cavity is situated. The cement for the impression is forced into the cavity from the lingual surface. It is needless to state that the cavities of front teeth are prepared entirely from the lingual aspect. Matrices for bicuspid and molars are of the same general shape, but proportionally wider and shorter. The band to form the right angle is in the middle of the strip of copper and one arm of the bend extends over the occlusal surface of the adjoining tooth. The matrix for bucco-occlusal or linguo-occlusal or mesio-disto-occlusal cavities is a joined band encircling the whole tooth. Where there is an over-hang on the exterior of the crown into which the cement would be apt to run preventing the easy removal of the impression it should be built up with melted paraffin.

The taking of perfect impressions of cavities is a proceeding at first sometimes troublesome, but one in which a little experience soon gives dexterity. It is a procedure not especially disliked by patients and one requiring no great art or skill in the operator. There is no mechanical reason why a properly shaped cavity should not yield an accurate impression. There is no mechanical reason why a perfect impression should not yield a perfect model. The steps of the procedure in the making of a piece of porcelain which shall exactly fit the original tooth cavity are merely mechanical. Being mechanical the resultant inlay should be perfect, because mechanics do not lie any more than do figures lie. That there are many improvements which the ingenuity of inventive minds will

produce is certain, but with the means now at our command it is possible to obtain as good if not better results from impressions of cavities as by making the matrix in the mouth. The different steps must be executed with precision—the new idea of the end sought, viz., a perfect impression of a perfectly formed cavity must be kept in mind and success will crown your efforts.

The color should now be taken and the cavity temporarily stopped with gutta-percha until the appointment for setting the inlay.

In the laboratory the impression is set in plaster of Paris for its easier handling and protection, the piece being made about two inches square by one-half inch thick over all. To make the model, coat the exposed surface of the impression and the surrounding plaster with talcum, mix cement of a different color to that used for the impression to the consistency of soft putty, coat with talcum, and fill it into the impression, and about one-eighth inch over the margin. To prevent sticking after a few moments' crystallization while the cement is still in its hardening stage, it should be slightly loosened from its seat in the impression and again pressed to place to remain until it is thoroughly hardened. The model should remain in situ for a number of hours, over night when convenient, to allow thorough crystallization. The model is next set with plaster in a bed plate. We use a modified Ash bed plate, such as is furnished in the inlay swaging outfit made by that house, and also a larger size for more extensive cases. The bed plate, as furnished, is, however, too shallow; it should be drilled out to the depth of three-eighths of an inch. This allows the cast to be set deeply and securely for the press work. The platinum foil furnished by the S. S. White Dental Manufacturing Co., one one-thousandth of an inch thick, is used for the matrix. The matrix is adapted in the usual way, the plunger and water bag of the press, however, being actuated not by the hand screw accompanying the press but in a strong vise. If the cavity is wide and deep the tendency to shrinkage in the porcelain during the fusing process may be overcome by fitting a rod-like piece of porcelain to extend from one side of the matrix to the other. One advantage and a very important one of making the inlay from an impression lies in the fact that if the color or the fit is imperfect, duplicates may easily be made in the laboratory without further trouble either to patient or operator. The making of dupli-

cates is so easily and quickly accomplished after the model is once made that it constitutes one of the chief charms of this kind of work. It is the belief of the writer that inlay work offers the most effective cure for dental caries now at our command. Two years of experience is sufficiently long for a conclusive judgment regarding its many advantages over old methods. In closing, I wish to take this opportunity of thanking Dr. Jenkins of Dresden for his inestimable services to humanity and to our profession in doing so much to extend the use of inlay work.

PORCELAIN INLAYS.*

BY PAUL GUYE, D. D. S., GENEVA, SWITZERLAND.

Porcelain inlays are gaining more and more in favor and though the literature relating to this topic is getting indeed very copious, I think that there is no need of apology yet for selecting it as the subject of a paper. Knowing full well the progressive spirit of the body of men I am addressing, I shall not waste the valuable time of this assembly in dwelling upon the advantages of porcelain as a filling material. I take it for granted that there is no one present who does not recognize the merits of this work, which we owe for a very great part, to the strenuous efforts of our eminent colleague, Dr. N. S. Jenkins of Dresden.

I think the only two points still under discussion are the limitations of the method, and which material, high or low fusing porcelain, is to be preferred.

It is not my purpose to discuss at any length what limits we shall assign to the usefulness of porcelain inlays. This is a problem which will require a good deal of time yet to elucidate, and I shall simply state that in this respect, I enlist myself in the ranks of the great majority who think that the esthetic qualities of porcelain should be the chief reasons to guide us in our choice of the proper filling material in a given case. This means that its use (aside from exceptional cases) must be restricted to visible cavities only.

Authors who write on this subject generally make a confusion between *inlays* in general and *porcelain* inlays and seem to ignore that inlays can with very great advantage be constructed of gold.

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The inlay method of filling cavities, generally speaking, has some special merits of its own which are constantly attributed to the *porcelain inlay* method alone. I am specially referring to the now well proved conservative property of inlays in teeth where the tendency to decay is very great, and to the mercifulness of the method for patients who cannot, on account of a weak constitution, stand long sittings in the dental chair.

For cavities in the posterior teeth, when for some reason an inlay is indicated in preference to a gold or amalgam filling, a *gold inlay* will give us all the advantages of the inlay method, without any of the objections of porcelain, especially its brittleness. Besides, a very strong argument in favor of this method which, unfortunately, has attracted far too little attention from members of the profession, can be found in the fact that with gold inlays the edges can be burnished with great exactness to the borders of the cavity after the cement has set, thus practically suppressing the cement joint, that great bugbear of the opponents of inlay-work. The second point is much more difficult to settle. On this side of the Atlantic, low-fusing bodies are in great favor, while on the other side, most porcelain workers are laboring under the "*high-fusing delusion*," as Dr. Jenkins has been pleased to put it in a recently published paper. This, by the way, is rather hard on such men as Drs. Head, Capon and Reeves and other prominent lecturers and clinicians.

Having spent for years considerable time in making experiments in and out of the mouth with almost every material in use since the crude glass inlay was first introduced by Herbst, and, in view of the fact that, to my knowledge, a paper on high-fusing porcelain inlays has never been read before this society, I beg leave to enter a plea in favor of this method, which I have adopted for reasons which I shall state as briefly as possible, though it would be easier to speak on this subject for two hours than for 15 minutes.

In the first place, let me state that even the most enthusiastic advocates of low-fusing porcelain have nothing to say against higher fusing bodies, for these materials have been so long employed in the mouth in the form of artificial teeth, crowns, continuous gum sets, etc., that no one, I think, would deny their indisputed strength and indestructibility by the fluids of the mouth, while time only will tell how long we may expect bodies containing a high proportion of alkalis to withstand their powerful destructive action.

It is to the platinum matrix that detractors of this method object, and I venture to state that we may consider as a self-evident truth the assertion that if platinum had not to be used, the necessity for low-fusing bodies should never have arisen.

If, then, this difficulty of making the matrix with platinum could be removed, there would no longer exist any disagreement.

That this difficulty has been greatly overestimated is obvious, for there is not the slightest doubt that very good work is being done in America with high-fusing bodies. If one finds platinum difficult to handle, there is a little expedient, which no one seems to have thought of, which permits the use of Williams' platinum gold. This foil, as every one knows, consists of a sheet of platinum between two sheets of gold. It is almost as pliable as gold and though it melts at a lower temperature than platinum, it can be used even with the highest fusing bodies. The trick consists in making the matrix with platinum gold and then plunging it into a little aqua regia which dissolves the gold, in one minute, if gently heated (not boiled) in a test tube, leaving the platinum intact. Any kind of porcelain may then be used. If the matrix is to be invested, No. 2 platinum gold may be used, but if not then No. 3 is preferable.

Another way to facilitate the making of the matrix and which is just as useful for gold as for platinum, is to mold the foil somewhat after the general shape of the cavity. There are on the market two outfits; the Bruhns and the Ehrlich & Schnass, which, however, I have not found as useful as I expected at first sight. They start folds in the foil and, especially with platinum, these are carefully to be avoided, for they very often cause misfits.

After much experimenting and after having wasted a goodly number of ounces of foil, I have succeeded in producing matrix blanks without tearing or wrinkling the foil. These can then be annealed, to remove all elasticity produced by swaging, and then be numbered and kept in stock. When the cavity is ready, a suitable blank is selected and with much greater ease adapted to the walls with almost a certainty of getting a very good matrix, without wrinkling or tearing. This method saves a great deal of time and has the advantage of effectually getting rid of all troublesome surplus at the gingival margin. I am not prepared at present to report fully on it, as I am still occupied in perfecting it.

I hope to make it so easy that the blanks may be prepared in

quantities at a time and in a very few moments, by the mechanical assistant. Even to those who find that it is a very simple thing to make a gold matrix, the method I suggest of having these blanks ready made will in a large number of cases appear worth trying.

If to these facilities we add the use of properly constructed instruments to press the foil against the walls instead of the well-known spunk method, we shall have made the process a little more systematic and placed the making of an accurate matrix, whether it be gold or platinum, within the reach of any dentist of even average skill. This is especially true if we consider the fact that, provided the margins of the matrix be intact, it matters very little whether the foil is torn, even to an extent which to the inexperienced would make it worthless, and, also, that it is quite useless and even inexpedient to try to bring the foil to the very bottom of the cavity.

This question being settled thus far, we shall now examine what are the advantages of high-fusing porcelain. I shall try to be brief, as this question has been so much discussed that there is almost nothing new to be said.

High-fusing bodies in general (and especially the one I have been using with very great satisfaction since it was placed on the market—the S. S. White Inlay material) have a greater translucency and a much more life-like appearance than low-fusing bodies. They shrink very much less and have no tendency to ball up nor to round off at corners, which allows building out of even extremely sharp angles, as is evidenced by the specimens I am passing around. They do not become porous or bleached in the furnace, even after repeated bakings and present in that respect a very large margin of safety. I am passing around a few samples of S. S. White's body, which have been purposely left ten minutes in a gasoline furnace that glazes it in two and one-half minutes. The color is exactly the same as that of the sample furnished by the manufacturer.

One does not need to watch the fusing. Good results are invariably obtained by using a chronograph after, of course, determining in advance, with a little experimentation, the time it takes in one's furnace to glaze the body. The operator is at liberty to attend to something else in the meanwhile.

An advantage, the importance of which cannot be overestimated, but which pertains rather to the platinum matrix than to high-fusing

bodies, is that after one or more bakings the matrix may be again burnished to the walls, the metal having been annealed, and thus effectually counteracting the tendency to warpage upon being heated that obviously exists in every metal after it has been swaged or burnished.

It does not seem rational to ask more of a piece of thin foil than one would of a No. 24 piece of plate that is to be swaged to make a dental plate, and which, of course, must be annealed several times, nor to expect that the asbestos investment, which, at the same time, has a very decided shrinkage of its own, should be able to prevent that tendency to warping.

I wish to put much stress upon the fact that with a platinum matrix no investment is necessary for it is a great saving of time not to have to wait for the alcohol to slowly evaporate.

With a platinum matrix the unfinished inlay may be tried in the cavity any number of times to ascertain that the contour is correct, which in many cases is invaluable. If the contour has by mistake been made too full or if the color is not right, nothing is easier than to place the inlay in the cavity, to hold it there and to grind off some of the porcelain in order to change the shape or add body of another color.

All this is impossible with a gold matrix, I believe, or, anyhow, authorities have not recommended it, to my knowledge.

I shall now review the different steps of the making of a porcelain inlay, avoiding as much as possible the repetition of that which has been said before by others and which has become accepted practice, and referring only to the special methods employed in high-fusing inlay work.

I have nothing new to say about the preparation of the cavity, except to state that for this very important step of the process the employment of a lens is a necessity. I recommend especially, to those who have not tried it, Dr. Berger's stereoscopic magnifying glass. They have no idea what a help they will derive from the employment of this extremely useful instrument. The possibility that is thus secured of making use of the third dimension cannot be overestimated in the preparation of margins of cavities. Oculists consider that a man who has lost one eye has his vision impaired in the ratio of 70 per cent, and there is indeed that much difference between the flat image given by an ordinary lens and the one produced by the binocular magnifying glass.

I have mounted one of these lenses on a head attachment, made originally for a little electric lamp and I have retained the lamp to be used in connection with the lens on dark days, as sometimes the operator has to stand in his own light. This leaves both hands free and allows me to work from the image in the lens, if I choose, in the finishing of the edges and by simply raising my head a little, to use my eyes unaided when preferred. The use of the lens is also to be recommended in the filling in of the matrix with porcelain.

Our cavity being ready, we shall now proceed to make the matrix. This is where the supposed insuperable difficulty comes in: "Platinum is intractable, it works too harshly to allow the making of a matrix," is the phrase you read and hear very frequently, and I must admit that after numerous trials with platinum, which I had procured for the purpose, I also arrived at the same conclusion. It was only when I got the proper kind of platinum and knew how to anneal it that I succeeded with it. All the secret lies in the purity of the metal, in the temperature at which it is annealed and in the time this temperature is maintained. You may get very near the fusing point of the metal without appreciably increasing its softness, if you do not wait long enough; you must keep the platinum at that temperature for at least ten minutes, and sometimes longer.

The annealing must be done in an electric furnace. Annealing in a gas flame only makes the metal harsh on account of the well-known property of platinum of absorbing gases at high temperatures. Annealing on charcoal is injurious, for platinum manifests also a great readiness to absorb silicon from the ashes. I read somewhere (I think it was in an article written by Dr. L. E. Custer), that if platinum scrap is melted by means of an arc lamp it gets very brittle on account of the carbon it has absorbed.

When the metal is properly annealed it becomes perfectly soft and does not make that metallic noise, such as sheet iron makes when it is agitated in the air. In fact, it almost resembles tin foil. In that condition, platinum is perfectly fit to make a good matrix. It has this great advantage over gold that it does not require so many precautions in order not to distort the finished matrix in removing it from the cavity.

In order to facilitate even more the making of the matrix, I have devised a special set of instruments, which consist of steel burnishers covered with soft rubber, which are to take the place of

the spunk held in the pliers. This idea, I think, is new. There are at present on the market some soft rubber instruments, but they are of no use whatever in proximal cavities. Being made on the principle of the little erasing rubber placed at the end of lead pencils, they are too soft and too thick to be used in any but cavities of easy access, which are the ones where they are the least needed.

A blank matrix of the proper size is selected, put in place in the cavity and held there by means of a strand of floss silk passed around the tooth while the burnishing proceeds with the rubber instruments, followed by the steel burnishers. I had a special set of steel burnishers made to order for me. I found them useful for burnishing the edges, which are the only portions of the foil which need be touched with steel instruments.

The thickness of platinum foil to be used in large cavities is $1/1,000$ th of an inch or $3/100$ of a mm., which corresponds to No. 40; in small cavities, foil $1/2,000$ th of an inch may be used.

As I said before, it is not advisable to burnish the foil to the bottom of the cavity, as it is preferable to have a rather thick layer of cement in that place. This takes advantageously the place of the extra thickness of foil which some authors recommend to place in the bottom of the matrix before placing the porcelain, in order to make the finished inlay sink deeper in the cavity and get a tighter fit at the edges.

Having obtained a good matrix we now proceed to fill it in with the body. This had better be done while the matrix is still in the cavity whenever feasible, for it allows the condensing and the thorough drying of the mass with bibulous paper, which lessens the shrinkage and consequently the number of bakings.

The best method with a high-fusing body is to fill the matrix rather over-full and with a small spatula followed by a camel's-hair brush to separate the porcelain from the edges of the matrix. This is necessary and must be done accurately, for if the body is allowed to remain in contact with the margin at any point, the shrinkage will take place entirely toward that spot and defeat the object in view, which is to make a second burnishing possible. It would be impossible to separate the porcelain from the metal at that point. In the case of large inlays, the placing of one or more pieces of a porcelain tooth of suitable color, in the bottom of the matrix, lessens the shrinkage and saves a good deal of time.

The filled matrix is then placed on the floor of the furnace and baked the required time. I found it is a great mistake to simply biscuit the porcelain at the first baking, as recommended by some authors. If this be done the porcelain will certainly shrink further upon being baked a second time and separate from the margins, which cause great loss of time. The small crevices caused in that way sometimes necessitate several bakings in order to fill them up little by little. The porcelain must therefore be glazed each time fresh body is added, and there is no chance of the color getting lost except in the case of gross neglect.

The matrix, as stated before, can, of course, be tried in the mouth any number of times to make sure that the contour is correct.

When a sufficient quantity of body has been baked in the matrix, generally after the first baking, the matrix is replaced in the cavity and while it is held in place as heretofore by means of the silk, the margins are carefully gone over again with small burnishers, the point of which is inserted between the porcelain and the foil. More body is then added and the inlay finished in the usual way. The matrix is then stripped off, which, especially if the platinum is thin, is a little more difficult than in the case of a gold impression. A very small bur, run at high speed, is very useful in removing every bit of metal. This is important, as even an almost imperceptible quantity of platinum left in the neighborhood of the margins, gives a blue tinge to the inlay. The inlay is then tried in the cavity and if found to fit is grooved and cemented in the usual way.

As this kind of work admits of no mediocrity, if the fit is found defective, the inlay must be made over again. This is a great hardship for the busy practitioner. I have sometimes evaded this dire necessity by making another platinum or gold matrix, leaving it in the cavity and besmearing it with some thin, low-fusing body. The ill-fitting inlay is then forced into this still wet lining. The margins are trimmed with spatula and brush and the whole taken out, invested and baked. If the work be carefully done, one baking, or, possibly, two at most, will make a very great success of what would otherwise be a failure, of course, taking it for granted that the color of the defective inlay was good. In case of large inlays time is saved that way.

The retention of inlays is, in some cases, a difficult problem. Grooving with disks is usually sufficient. In the case of large inlays,

vulcan carborundum disks may be used, but for small pieces of porcelain diamond disks must necessarily be employed. They are expensive and do not last long. When worn, however, they can be very easily recharged. If there is any one present interested in this, I will gladly demonstrate the method later. Various other methods of retaining inlays have been suggested; among which may be mentioned the placing in the bottom of the matrix before filling it in with body, of small pieces of copper wire, to be dissolved in acid after the inlay is baked. The employment of this process is, of course, entirely out of the question in the case of high-fusing porcelain.

An extremely ingenious method of attaching platinum pins to inlays has been invented by a Genevase dentist, Mr. Boesch, who uses it exclusively with porcelain enamel; but very likely his idea with some little modification could be applied to high-fusing work. I am passing around some specimens of the work done by Mr. Boesch, representing the various steps of the process, and I will be pleased to give any additional explanations to those who might be interested.

I am personally opposed to the introduction of platinum pins in porcelain wherever they can be avoided, for they are indisputably an element of weakness. When a large inlay is to be made for a devitalized tooth I greatly prefer using as an anchorage a porcelain rod extending into the pulp chamber.

This can be done in the following way. While the matrix is being made, the pulp chamber is filled with gutta-percha, which is then removed and a small rod of hard porcelain ground to size in a mandrel in the engine is passed through a hole in the matrix exactly as one would proceed in the case of a dowel for a Richmond crown. The matrix and rod are held together with hard wax and then invested. The wax is removed and the baking may proceed as usual. No investment need be used after the matrix has been burnished the second time, but the inlay must preferably be placed on a bed of dry powdered silex.

A paper on porcelain inlays would not be at all complete without a few considerations on colors and shadows. This is a very perplexing problem. The solving of it is almost entirely dependent upon the material which is used for attaching the inlays. Will a permanent, translucent cement ever be invented? That of course is very doubtful.

Nothing is more vexing than to see an inlay, the color of which seemed very satisfactory before it was set, change entirely in appearance and get too dark when the operation is completed.

The only way to lessen the evil is to use a body of a *much* lighter color than the case seems to indicate. This with some outfits is impossible on account of the lack of a color light enough to be used for very small inlays in very white teeth. The S. S. White outfit is the only one to my knowledge in which this necessity has been recognized, and I sometimes use pure the very white No. 81.

The color of inlays depends upon so many different factors: Location, depth of the cavity, color of the cement used, etc., that it really requires a large amount of experience to determine in advance what the color of the finished inlay is going to be.

Body of a lighter color must be used for a distal cavity in a lateral incisor, or cuspid, for instance, than for a mesial cavity in the same tooth. Buccal cavities, unless they are shallow, require porcelain of a shade corresponding to that of the natural tooth.

Still, these suggestions are not sufficient to always allow us to get as good results as we desire, for it seems impossible to make inlays which look well when viewed from different points.

I have, by way of experiment, made porcelain fillings for proximal cavities in artificial teeth, as it is obviously no use trying it in extracted natural teeth, and generally got this result: The color, which is very good, if the tooth is examined while facing the light, becomes alternately too light or too dark, according to the manner in which it is illuminated.

This is one of the chief reasons why high-fusing inlays are to be recommended, for this problem of colors and shadows is so intricate, and there are so many chances that the color we are trying to produce will not be the right one after all is finished, that we ought, at least, to use a material which invariably gives us the shade we want, and which allows us to make changes easily if required. We shall then know that the fault lies with us, and not with the material and be able to learn by our failures.

FAILURES IN CROWNS AND BRIDGES, WHEN NOT DUE
TO FAULTY CONSTRUCTION.*

BY B. J. CIGRAND, M. S., D. D. S., CHICAGO.

We have during the past five years devoted much attention to crown and bridge work, the consideration of the superstructure, root preparation, band construction and crown formation. We have arrived at a point where we fully realize the importance of the mechanical principles involved, in that we appreciate the force of the jaw and the necessity of perfect fit on the roots. In this consideration of force, we have in a measure forgotten the importance of the basic purpose which determines the ultimate success of the mechanism. Imperative as it may seem to fully comprehend the superstructure, the substructure of a crown or bridge is indeed primal. The one is no more essential than the other, and both are indispensable.

Dental gatherings throughout the United States have reflected the opinion that there is still a disposition on the part of too many operators to employ the forceps whenever the dental organs present conditions slightly unfavorable for a filling, or a crown. There is much comfort, however, in the fact that a happier era is upon us, for the dentists who are members of the National, State or local societies are no longer guilty of extracting or crowning teeth which may be preserved by the agency of a perfect filling. Not only are the members of dental societies eager in their war against this form of malpractice, but the students in colleges are also earnestly laboring to become deserving of membership in a profession which hopes to save and restore the organs of mastication. The general public is gradually being educated to a full realization of the importance of good teeth, and the time is not far distant when "the loss of a good tooth will bring sorrow to the entire household."

It is deplorable that too frequently the lateral or first bicuspid roots are extracted, and a tooth supplied by some system of bridge work, cutting down the sound adjoining teeth, collaring them with gold, when it was within the province of dental prosthesis to save the root, and place upon it an individual crown, such as would afford the natural denture with a hygienic substitute fully in accord with physiological laws. Nature scorns to be tied up, or confined, and

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the present systems of bridge work, with their yokes of gold, are contrary to nature and work ill results—more especially when the load is unbearably large, as in the case of an attachment of five or eight artificial teeth resting on two roots. How preëminently better to save these roots by affixing two individual crowns and supply the missing teeth by well-fitting partial plate or a removable bridge denture. The profession does not yet recognize the merits of removable saddle bridges. To avoid applying bridge work in every instance possible and attach the individual crown instead should be the earnest ambition of every member of our profession. Yet some continue advocating large bridges on weak foundations.

It is to be regretted that nearly all inventions or discoveries in either arts or sciences suffer much at the hands of the over-zealous. Enthusiasm is a necessary attribute in all progressive work, but it must be curbed by a judgment founded on experience. Few new discoveries have run the gauntlet of the profession better than bridge work. That this system of restoring lost dental organs has suffered much through too prevalent applications, no one familiar with its history will dispute. Advances in the arts and sciences must be of slow growth. Like government affairs, reform must be of so gradual a process, that unbeknown, it steals its way into the hearts of men; for when of too rapid a nature it is both unhealthy and short-lived. In our profession as in all organized society movements, the conservative must be the “pillars of strength.”

The conservative practitioners throughout the land have recognized the error of the enthusiastic bridge builder. They have observed that the hastily constructed Richmond crown with ill-fitted band has inaugurated a siege of peridental and alveolar troubles. They have noted that the all-gold-telescope-advocate who caps a slightly decayed tooth has outraged his profession, and all this has taught the conservative practitioner that no tooth must be subjected to a process of crowning unless the restoration of the neighboring teeth absolutely indicates such a procedure. Dental annihilation properly falls to the oral surgeon, and has nothing in common with prosthetic dentistry, which has come to mean dental substitution and preservation. Crown work has advanced in theory only when the theory has brought fruit in actual practice. In its twofold evolution it absorbs from every available source, which tends to broaden its art or perfect its science, and in consequence calls to its aid

anatomy, chemistry, therapeutics, surgery, physiology, pathology, mechanics and sculpture. The prosthetic has evolved from the mere mechanical to a plane where it is quite in evidence in the dental operatory, while the operative has also become more thoroughly interlaced with the prosthetic, and the necessity of resorting to the laboratory is apparent. And so, instead of these two divisions of dentistry separating, they are coming closer together, and call into effect the same underlying principles of both mechanics and medicine.

Permit me to make the following classification of crowns in order that you may more clearly comprehend the object of the paper. First, those of porcelain; second, those of metal, and third, those of both porcelain and metal. These three divisions might be subdivided into three groups—namely, those which depend on a band; next, those which depend on a post, and lastly, those which are anchored by both band and post.

Of the innumerable methods advanced for crowning or substituting teeth none can be advocated as the universal or best; each has an undisputed territory; all have meritorious features and all share in shortcomings. It, therefore, remains for the operator to decide which of the methods or systems is most preferable.

The first class of crowns which we will consider relates more especially to the Logan, Davis, Brewster, Fellowship and others of similar construction. I do not purpose criticising the construction of any of these crowns or bridges, but will confine myself to calling attention to matters of importance—others than those which relate to construction. These porcelain crowns—more especially the Logan—can be made more permanent by making the anchorage on the root more stable.

In order to get better retention and afford greater strength to the root the crown may be ground and adjusted on the root end, and at the same time the crown post be fitted into the canal so tightly that, independent of the cement, the crown will have a firm hold on the root. This method of sparing root structure and giving additional anchorage to the metal post gains the approval of all who recognize the principle of force in mastication. Too many operators drill or ream out too freely from the canal and leave a thin wall of tooth substance to carry the great strain and leverage of the Logan post. A moment's reflection will convince any one of the shortcomings of this method.

In using the Ottolengui canal reamers it is a mistake to employ a large one and produce a large circular opening into the root to receive the Logan post. Choose a small reamer, and by giving it an antero-posterior movement you are enabled to cut an opening of an elliptical character, and you leave the root structure thick at its lateral sides, where the major strain falls and where the root must of necessity be the strongest. Further, this rhomboidal opening allows the Logan post to tightly hug the walls of the root canal and thus affords additional anchorage to the crown.

It is evident that a crown set as recommended cannot loosen or fracture the root unless the post first stretches, and this, I believe, is the cause of many of our crowns loosening. The primary cause does not lie hidden in this, however, but in a factor of which I will speak later. If the posts in the Logan or in any of the full porcelain crowns were made of iridio-platinum instead of pure aluminum, there would be less likelihood of the yielding process and the stability of the crown would be more assured.

The Brewster, Davis and Fellowship crowns are in many respects an improvement over the Logan, inasmuch as the pin is smaller and more rigid, admitting of crowning small-rooted laterals and insuring permanent lodgment. I have obtained the best results from the Brewster crown by fitting the post tightly and just before setting taking the crimping pliers and producing a wave in the metal post. This causes the crown to adhere tenaciously without contributing a strain to the material of attachment. This method I demonstrated at one of the recent college clinics.

The next step in setting these crowns so as to attain success is of great importance and must be carefully executed. Place a sparing amount of oxyphosphate on the post portion and paint the joint ends of the porcelain with a film of chloro-rubber, the latter being produced by adding chloroform to red rubber in a sufficient quantity to make a thick paint. Having thus prepared the post and basal end, and having protected the root from moisture, insert the post and gradually bring the crown into the desired position. I frequently employ instead of chloro-rubber a thin band of gutta-percha, heating the crown with the latter and then applying the requisite cement. This method has been advocated for some time, and it has been shown that gutta-percha has all the properties necessary to withstand the action of the acids of the mouth and as a protection

against caries, even where every other material has proven a failure. I have found that chloro-rubber is fully as good and possibly better for this particular service, in that it can be handled with greater ease and does not become aged as soon.

The earliest reference I have been able to find regarding this method occurs in the *Dental Cosmos* of 1887, page 749, and reads: "Dr. Richmond usually takes a thin, perforated disk of gutta-percha, pushes the post through it, warms the crown, presses it into place, and when cooled removes the crown and with a sharp knife trims away the gutta-percha close to the crown neck. He then warms the crown, puts a very little oxyphosphate cement on the post and presses the crown home."

I have had excellent results during the past six years, since I have employed gutta-percha in combination with the cement, and I hope to emphasize the necessity of sheltering the cement by some agent congenial to the oral tissues and capable of resisting the action of lactic and hydrochloric acid, the cement acting as an anchor.

It is very important that we give careful attention to the manner in which we mix the cement. If we hope to perfectly anchor the crown we must be certain to incorporate a liberal amount of powder into the mixture and stir rapidly, since the fluid with but a sparing quantity of powder cannot endure a strain. Even the temperature under which the cement is formed has much to do with the strength of the cement. Cement gives the most favorable results when mixed in a temperature of 75 degrees F. For some time I have mixed the cement on a porcelain bottle having four flat surfaces, filling the bottle with cold water in hot summer weather and hot water in cold winter weather. During the extremely warm weather I have resorted to this method and am decidedly pleased with the good results.

In this society not long since the question of setting porcelain-baked crowns was discussed, and some few entertained the idea of setting them with gutta-percha, advocating that this material admitted of easy removal of the crown and also acted as a soft, yielding cushion for the porcelain substitute. I am not prepared to accept this method as practical or hygienic. I doubt the practicability of such a procedure, besides it indicates a temporizing effort. But this is not the main reason for my objection to the use of gutta-percha alone; I cannot believe that a crown which is set on a

material which acts as a cushion is sufficiently dense to exclude the oral fluids. If it yields, springs and changes to every form of pressure, it goes without saying that the material is porous and in consequence harbors the oral fluids, and this would quickly destroy its efficiency, as also allow lodgment of debris. I have tried this method and have discarded it, since I have greater faith in the employment of cement and gutta-percha, when used in combination as already cited.

Some operators advocate the use of the bur in shaping and trimming down the joint portion of the root, but it has been my experience that the corundum wheel produces a smoother surface and is not so apt to spring from the border of the root. The wheel must be narrow and of sufficient circumference to allow easy access to the root without liability of interference with the adjoining teeth.

I have in days gone by used these root facers and find that they not only abuse the gums, but break the enamel, causing a fractured circumference. Besides, the severe wrench given to the root is sufficient to disturb the continuity of the peridental membrane and tax the entire nervous system, and by this treatment you may have inaugurated inflammatory processes which threaten the usefulness of the bridge or inflicted a neural disease to the patient, and hence the work is a failure.

The second class of crowns—the all-gold telescope—often results in failure because of two causes—the one being that many dentists still believe in capping exposed pulps, and second, because they over-irritate the pulps while cutting and grinding the tooth into the required shape. It has been argued that the reason why pulps die under well-made telescope crowns is because of the presence of arsenic in the cement. I do not now share in the belief of this theory, since cement fillings, when lying in proximity to the pulps, do not devitalize the organ. The reason for the frequent disturbances in this form of crown arises from super-irritation of the pulps while shaping the tooth with disks and stones. The heat which these processes induce is decidedly more severe than we on the business end of the instrument realize. We need not fear devitalization if we are certain of healthy conditions and observe care in grinding the tooth.

The all-gold shell, when telescoped over a large amalgam filling, often results in failure because of the action of the mercury in the

filling, and when this filling is anchored by screws other than gold or platinum it will invariably result in failure, notwithstanding that the gold crown is constructed without a fault. The anchorage has been insufficient.

The third class of crowns—those of porcelain, post and band—share in the same liability of failure as the previous crowns, with the additional likelihood resulting from placing the band further under the free margins than the all-gold, the latter having the advantage of tooth surface for attachment. Often when these crowns are set on a small lateral root the circumference of the root will not allow a thick, heavy post. The result is the force of mastication bends the post and tips the crown forward, and makes it look about as coherent as the leaning tower of Pisa, and like this historic tower can be advertised to the world as standing so by either accident or design.

Very frequently patients will call, describing slight pain at the gingiva of a crowned tooth. Possibly you have crowned the tooth and remember that the root was carefully prepared and the crown perfectly constructed. You cannot account for the inflammation. Invariably you treat it with some medicinal agent, but the patient returns with the same suffering and the color lines unchanged. If the fundamental law of surgery is not observed—namely, “Remove the cause,” the utility of the crown is seriously interfered with and often the inflammation extends, ending in failure.

If you will take a tube of rubber and cut off a small ring about one-sixteenth of an inch wide and scallop it out so it will complement the alveolar ridge, and slip this over the distressed crowned tooth and dismiss the patient with instructions to return the following day; the next call you may carefully remove the rubber band; do not wipe the circumference of the root with cotton, as the gums are highly sensitive and congested, but bathe the parts with tepid water, forced against the gum from the syringe, and, upon investigation, you will behold nodules of cement. Remove this foreign matter and the gums will rapidly heal and hug the crown. I have observed that innumerable crowns and bridges are causing this condition and it behooves us not to discharge the patients until we have satisfied ourselves that the final work of adjusting and anchoring the crown and bridge has been carefully done. In connection with this do not forget that the durability of a crown and bridge largely depends on having the parts perfectly dry before you bring

the crown into position. If you chance to have the time, take a crown or bridge before setting and subject it to the critical lens of a microscope and you will discover a few more causes which produce prosthetic failures.

There are many things which contribute to the success of crowns and bridges, and possibly you will pardon me for reminding you of the tendency of this American age, which has come to mean hurry, haste and hustle—or the greatest amount of work in the least given time. We are suffering from a disposition to accomplish results without taking time, and this the logic of ages says is impossible.

What the artisan pronounces as complete the artist stamps as just begun, and there is as much difference between the results of the two as there is between a fiddler and a violinist—a distinction which possesses a difference. The real masters in art and science attribute their success to observing the importance of trifles—not to the number of instruments or brushes they possess, but to a full knowledge of what few they have. Michael Angelo and Benjamin West stand out as shining examples of what could be accomplished with one chisel and a single brush. In other words, a familiarity with detail and full understanding of “finishing touches” were the essence of their achievements. The great artist Fuceli, while teaching the painstaking task of portraiture, had a student who diligently applied himself to portraying a distinguished Roman senator and after months he showed the product of his brush to his famous instructor, who said: “You are doing nicely; the basic work is splendid and with earnest fortitude you will in a few more months have a picture of Callacius.”

There is a lesson in this for all humanity—though I cite the incident with a view of halting the rapid prosthesis. If we awaken to this thought our labors will be highly compensated by an appreciative public when we render artistic, serviceable and enduring substitutes.

REMOVABLE BRIDGE WORK.*

BY W. E. GRISWOLD, D. D. S., DENVER, COLO.

In presenting this subject I will preface my paper by asking you the question, Is removable bridge work desirable? This will give you a subject matter for discussion. In my judgment it is, and it

*Read before the Chicago Dental Society, June, 1902.

has already come into very considerable use. The objections to present methods of construction I need not cite. They are apparent to all who have made bridge work to any extent. Some of the advantages of that which is removable are the ability to avoid the display of gold and to produce something artistic. Highly finished gold is very pretty in its place, but its place is not in the mouth, and our efforts should tend to raise the standard of our work above that of the jeweler's art. Another feature is the ability to restore the normal contour of the soft tissues, to exaggerate, if necessary, to give a harmonious expression to the features, as is so often necessary.

In inserting the four or six anterior teeth the total lack of harmony between the upper and lower lip in permanent bridge work is apparent to a casual observer. How many faces we see with deep lines about the mouth due to non-restoration of the absorbed tissues and in thin-faced people! This applies to dentures placed posteriorly, and when you can accomplish this with vulcanite and with very slight additional cost to the patient, are you justified in adhering to the old methods? Again, it affords the possibility of giving rest to the teeth to which it is attached by removing the bridge and giving nature a chance, with a little medicinal help, to restore to normal tone the overstrained, irritated and inflamed pericementum. In permanent work the strain of mastication comes entirely on the abutments. In removable work it can be distributed between them and the soft tissues, a certainly desirable condition. It also affords the opportunity to place temporary dentures that have a fixed resistance to the force of mastication and obviates the renewal of abutments when replaced with more permanent work.

But the next question is, How can we obtain these results? We will first consider the essential requisites of an attachment, which may be enumerated as follows: First, something which will be strong enough to resist all the forces of mastication and that will also stand the lateral strain. Second, something which will occupy but little space and can be placed in position where it will be out of the way of subsequent work. Third, something which can be tightened if in wear it becomes loose. Fourth, something in which the tension can be regulated according to the strength of the tooth to which it is attached is able to stand the force brought to bear

on it. Fifth, something which can be made shorter if in use it proves too long to let your denture press evenly and with force on the tissues and relieve the abutments. Sixth, it may be applicable to either a crown or a root cap, a filling in a tooth or a cavity made for it or a root canal. Seventh, it must hold an upper denture as firmly as a lower, also a denture where you have no posterior attachments as in partial, lower or upper plates, extending anteriorly or posteriorly to the bicuspid. It should also enable you to shorten it as the heel of the plate settles into the soft tissues, so the tooth of attachment will not be forced out of position by the strain brought to bear on it. Eighth, your abutments must be as firmly bound together as if you had a fixed bridge. Ninth, it must have a finder, or a condition existing between the attachment and box going over it so it is easy for the patient to place it in position. Tenth and last, but most essential, a locking device which will hold wherever you put it.

Now with such a device produced you must have accurate and reliable means of so soldering these to your abutments that they will be parallel one with the other, otherwise you can never get your denture in or out when finished. This must also be accomplished with ease. The average practitioner wants everything made so easy for him that he will not have to exercise his brain or expend time or effort to produce the same results as those who lie awake nights thinking how they can best overcome the difficulties which present themselves in every-day practice.

In presenting my system to your notice I show you something on which I have spent much time and thought. My patients demanded something in the way of bridge work which they could remove from the mouth, and I attempted to produce it and have made a great many devices for this purpose, but my first efforts were not satisfactory. I was convinced that something in the nature of a spring was the right thing, but this spring had to stand a high heat and the action of the oral secretions. There was no metal of that kind in the market, so I had to produce that first. After some two years of experimenting I succeeded, and my attachments are made of this metal, which will stand boiling nitric or sulphuric acid and a heat sufficient to flow 22 K. gold solder without losing its elasticity.

INTERNATIONALISM IN DENTISTRY.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

A close study of the tendencies of the age in the most progressive lines of thought will reveal the fact that there is a growing disposition in the minds of men of all civilized nations to encourage a wider exchange of ideas among the thinking men of the different countries than has ever heretofore existed in the history of the world. Internationalism is becoming an established fact, and no matter how tenaciously a certain element in any nation may cling to the old spirit of provincialism and isolation, the onward sweep of events must eventually carry with it an ever-broadening significance of life and its possibilities and a wider range of experience, not only among men, but among nations. The increased facilities for transportation are bringing the nations of the earth closer together, and we are therefore learning more and more of the characteristics of each other. In this there is a species of revelation which in its ultimate analysis means an increase of respect one nation for the other and an added general knowledge on the part of all nations.

It is quite the natural thing for an isolated or secluded community to grow presumptuous in regard to its own accomplishments, and to finally believe that the outside world merely fulfills its function by revolving around the community. The Chinese rice-gatherer, limited in his experiences and associations to the daily routine of his work, cannot be expected to develop a soul much above rice, no more than can the coal heaver confined in the depths of our own mines grasp a problem broader than the black walls which surround him. But let this same Chinaman come to America and mingle in a more complex environment, and we find him developing new traits with astonishing regularity. Much as we may assert about the persistence of racial characteristics in these almond-eyed sons of the orient, the significant fact still remains that the Chinaman we see on our streets to-day, after several years' residence in an American city, is not the same individual in very many respects as the one who plodded in the rice fields of his native land. A new environment and the influence of alien customs and modes of thought have wrought a change in this, one of the most striking examples of tenacity to race instincts and ancient traditions of any of the repre-

*Read before the Odontological Society of Chicago, October, 1902.

sentative nations of the earth—a tenacity fostered by thousands upon thousands of years of a practical isolation.

The same with the coal heaver. He plods on in his daily grind bowed down by the limitations of his narrow environment, till a breath of the outside world comes along and whispers something in his ear which makes him rise in his might and demand that his conditions be improved. Right or wrong, just or unjust, the recent enormous movement by the coal miners of this country was inaugurated as the result of outside influence.

And so it is in all relations of life. We cannot longer repress, even if we would, this ever-widening intercourse of thought and action among the peoples of the earth, and the encouraging thing in this connection is that for the most part it is beneficial to all concerned. Take even China for example. Granting that all of the reflections which it has become quite the fashion for every other nation to heap upon this cumbersome old commonwealth be true, it yet remains to be proved that we cannot all learn something of material benefit by a study of many of her modes of thought, her problems of life and her Confucian philosophy.

With nations as with men, much of the misunderstanding, the criticism, the ridicule and the general distrust of one another is fostered by ignorance of the true characteristics of the contending parties, and there is no more certain method of harmonizing many of the disaffections of life than by establishing a closer acquaintance-ship between the disaffected. Nothing has done so much in the past to break down the barriers between religious beliefs the world over as to bring the advocates of the different religions together in a common intercourse and exchange of ideas. There has been a general leveling up of racial and religious prejudices throughout the world, due solely to the fact that races of men and professors of religion have intermingled and learned one from the other.

And what is true of races and of religions is also true of the professions. Dentistry can never hope to attain the highest possible fulfillment of its mission unless the representative practitioners of the different countries come together in a mutual interchange of ideas and learn to look at professional affairs from a broader point of view than that afforded by the horizon of any single country. A narrow provincialism has too long impeded the progress of dentistry in every country, and the time has come when the thinking

men of the profession must awaken to the possibilities of internationalism and fall in line with the most progressive tendencies of the age in other fields of thought by holding frequent conference among the leading men of the different nations and fostering a spirit of fraternalism, which shall extend not only from man to man, but from nation to nation.

The benefits to be derived from international associations are too evident to require more than a mere mention. No one nation holds within its environs the sum total of excellence in any department of the world's work, and when we study the history of dentistry we are struck by the fact that many nations have contributed their quota to the general fund of knowledge now available upon this subject. It does not do for any one country to plume itself too proudly on its accomplishment in this particular, nor hold its head too high with the assumption of a lofty superiority over other countries. Each nation where dentistry has long been undergoing development has done something of note tending to its advancement, and full credit should cheerfully be accorded where credit is due.

For instance, Great Britain has given to dentistry a Tomes—in fact, two of them—and the imprint of this name on the pages of dental history leaves many an eloquent landmark of advancement that must not be ignored. Magitot of France during his lifetime worked hard and faithfully to throw additional light on many of the dark places in our science. But to go extensively into the mention of names would soon lead us over a list too long or subject us to the charge of invidious comparison. Suffice it to say that in the study of the abstract science of the profession Germany has contributed no small quota to the general knowledge of the subject. Holland has done and is still doing her full share, while Spain, through the energies of her leading practitioners, is making an impress on the profession which must work in no small measure for the ultimate good of all. Even in far Japan men are laboring disinterestedly toward the uplifting of our chosen calling, and if we would know what Sweden and Norway are doing we simply have to turn to the records of the recent meetings at Stockholm to learn of the activity of dental thought in that locality. The fact is that progressive men are found everywhere, and if we of America are not always impressed with the advancement in other countries it is due chiefly to two causes, that the dental literature of these

foreign nations is not often translated into English for us to read, and also that we do not mingle sufficiently with these countries in an international relationship so as thereby to become familiar with their advances. By remaining too much at home we cannot escape the danger of provincialism, neither are we likely to avoid the common error of falling into self-satisfied and egotistical conceits. It has become too much the fashion in certain elements of the profession in America to use the eagle's wings in an altogether undignified and vociferous flapping whenever the name of American dentistry is announced. If dentistry in this country has accomplished anything to give it signal distinction in the eyes of the world, then it is surely not for us of America to herald this fact from the housetops. Better far it were that we study our limitations, that we seek the excellence which may be found in others, and that we discard once and for all that traditional heresy that little good can come out of Nazareth.

Let us learn, for instance, of the possibilities of associated dental effort by studying the examples of Great Britain and France in this respect. Dr. William Trueman has recently pointed out that the British Dental Association has a membership to-day of something like twelve hundred. It conducts a journal of its own and maintains a treasury which enables it to carry on a philanthropic and benevolent work among the profession which would put to shame any similar effort of ours in America. Compare this with our own National Association, and it will be seen that we have still something to learn.

It was from across the water that the first strong and righteous protest came against the indiscriminate and barbarous exposure of gold in the mouths of the American people, and while the better class of American practitioners were, of course, not to be charged with the onus of this blatant display of vulgarity and lack of taste, yet it remained chiefly for foreign influence, both of the profession and the people, to set a seal of disapproval upon it.

But it is useless to multiply examples either pro or con regarding the characteristics of dentistry in the various countries. The main contention here made is that there is much of benefit to be learned in all countries, and this can best be done by fostering internationalism and a closer community of thought among the professions the world over.

One of the future possibilities of international relationship has to do with the unification of the standard wherever dentistry is taught in institutions, or where its practice is regulated by legislation. In the development of dental educational methods each country in the past has for the most part been pursuing a plan of its own, and has been following in too many instances along the lines of least resistance. This method of procedure could not well be expected to produce the best results, and the recent movement culminating in the organization of the International Dental Federation is one of the most hopeful signs of the times connected with the development of dental education. It has brought together the leading dental educators of the world, that they may deliberate one with the other and ultimately evolve a system of standards which shall be equitable and just and which shall have weight with every government whose attention is sufficiently called to it. It is well that a government should take an active interest in the advancement of professional education in its own commonwealth, and in line with the ever-widening influence of internationalism among all nations it is only reasonable to suppose that any government will take greater cognizance of a certain movement if that movement comes with the stamp of international approval upon it. This may eventually lead to a greater uniformity in legislative enactments controlling the practice of dentistry in the different countries.

It might seem Utopian to look forward to the time when a common basis of requirements shall be established in all countries so that an individual who has demonstrated his ability to practice in one country may be admitted to practice in any or all countries. This, with the varying methods of regulating practice in the different countries and the diverse systems of legal restrictions in vogue everywhere—even in the different sections of the same country—would seem to be an almost impossible achievement, and yet it would be very much nearer a solution if it were once generally known that the matriculation and graduation standards of the various nations were uniform. In the broadest possible conception of humanitarian equity and justice it must be acknowledged as a fundamental principle that if a dentist is qualified to properly serve his patrons in one quarter of the globe he should be entitled to serve them in any quarter; that if he is sufficiently equipped to take good care of the teeth of the people of Russia, or Japan, or England, or France, he

surely has the same equipment to attend to those of Sweden, Italy, Germany or America. This is self-evident on its face. But, unfortunately, the "common brotherhood of man" has yet to reckon with the stern realities of local legislatures and restrictive enactments, and what may be patent as an altruistic fact does not always find acknowledgment by the governmental powers that be.

And yet there is one thing which international associations may do without let or hindrance from governmental control. They may and they undoubtedly will break down those national barriers which hedge about the profession in the various countries—barriers built by the habit of thought, the trend of temperament and the individual characteristics and customs of each nation, and which leave their impress upon the development of the profession in that nation, in too many instances encumbering it with the restrictions and limitations peculiar to narrow and segregated modes of thought. These things can be brought about, and they are things of no small moment in estimating the possible growth of ideas when the representative men of all nations shall deliberate upon matters of mutual interest from a broad and equitable point of view, and in the end determine as the result of their deliberations what is best and most utilitarian not only for the dentistry of one country, but for the dentistry of all countries. When this shall have been finally accomplished we may confidently look forward to the time when there shall be no such thing as British dentistry or German dentistry or French dentistry or American dentistry, but when the uniformity of thought and sentiment shall make it possible to dispense with the qualifying adjective and unite the whole in the single but comprehensive and self-sufficient name—dentistry.

PRESIDENT'S ADDRESS*.

BY C. J. SOWLE, D. D. S., ROCKFORD, ILL.

Gentlemen: No conventional terms of felicitation can adequately express my congratulations to you on this occasion which rounds out the fifteenth year of the existence of the Northern Illinois Dental Society. The strength, cohesion, and excellent coöperative work displayed by this lusty body makes a record of which each and every man of us must

*Read before the Northern Illinois Dental Society at Rockford, Ill., October, 1902.

be justly proud. One need go no further than the history of this body to realize the value of organization in all human activities. Dental societies have revolutionized the conditions of the profession in the United States. Men bred and reared, so to speak, in the dental environment of to-day can hardly realize the condition fifty or more years ago. Then every man was isolated and this bred a natural progeny of prejudices and small jealousies. Each man seemed arrayed against his brother. As one recently wrote: "In those days lips were sealed, lest they might disclose an important method of practice. Nowhere throughout this broad, progressive land, in dentistry, was there any light upon this mediaeval darkness. It, however, proved to be the period before the dawn." We can never honor too much the memory of Horace H. Hayden, who, in the middle of the last century, was great enough to see the destroying effect of this separation, and to seek to establish that brotherhood which is the *sine qua non* of the highest development. Through his strenuous efforts the American Society of Dental Surgery was founded, the first step toward the organization of the profession into harmonious working bodies, which have raised the profession to a dignified level which could never have been attained by individuals working in selfish seclusion. We are the fortunate inheritors of the splendid fruits of this past struggle, and to-day we may be happy in realizing the fact that our fifteen years of united effort have given an impulse to the general profession in this part of the country. Our yearly gatherings bring together men who cannot be induced to foregather elsewhere, and our body is an active feeder to the State society which is one of the powerful educational factors of this country.

If organized effort has raised our profession to a dignified level which is a just matter of pride to us, a still higher development may be expected in the future if we may see a portent in the conditions of dental education. There was a time when requirements in dental colleges were two years of six months each. Then there was an advance to three years of six months each, and beginning with 1903 it will be four years of seven months each. This requirement is imposed on all colleges of recognized standard by the National Association of Dental Faculties. The curriculum, from having been of the simplest nature, has been expanded to a most complex. Special emphasis is now placed on laboratory work, bacteriology, his-

tology, physiology and chemistry, all of which makes a thoroughness of equipment for a specialty which must redound to the honor and standing of those who practice it. Shakespeare says, "Comparisons are odious," but we must concede that they are also very helpful when seeking to adjust relative values, and so I call your attention to the fact that for a physician who encompasses in his care the entire human body, the best regulated colleges impose a training of four years of seven months each, while the dentist who is supposed to be master of only one portion of that body is required to give the same amount of time. Is it not reasonable to believe that a profession practiced by men with such thorough equipment is at least the equal of the other professions?

There have been interesting things since last we met. During the year porcelain art has received a great impetus, and a new awakening has developed in the profession all over the country, concerning this particular department. Porcelain inlay work and porcelain bridges and crowns are responsible for the new impulse. Will you permit me to utter just a word of caution regarding porcelain inlay. In regard to this departure, we seem to be upon the crest of a tidal wave, but as only time can determine the permanence of this work, it would be only the part of wisdom to be cautious as to its indiscriminate use. As to porcelain—it requires a higher skill and the closer attention to detail than anything dentists have been called upon to do. A failure in any of its parts will ultimately result in failure of the whole; and as the skill of a profession is judged by the skill of the average man in that profession, it were better to adhere to methods that have demonstrated their serviceability, than to practice those that have not yet received the test of time. It must be conceded, however, that for esthetic and artistic results, so far as clinical experience has gone in selected cases, it looks as if this new art, when it is perfected in detail, will have a permanent place among the departments of dentistry.

The operative procedure known as "extension for prevention" has been widely discussed in dental journals during the last year. This method, which has its origin and greatest expression in the West and Northwest, is largely opposed in the East. This difference seems to be purely geographical in its nature, and seems to be due to a misunderstanding or misinterpretation on the part of the East, and a radical exaggeration of its interpretation by some in the Northwest.

But that there is a golden mean between these two extremes, there can be no reasonable doubt, after careful analysis of the tenets of this method. It is practically the only scientific method founded upon dynamics with which the dental world is acquainted.

In regard to prosthetic dentistry—you need not be told that there has been a revival of interest in this important department during the last year. The literature has contained more articles on this phase of dentistry than upon any other subject. The pivotal point seems to have been upon occlusion; but to my mind, a scientific analysis of the laws involved in occlusion is going to add a renewed interest in this much neglected department of dentistry. To no one is due a greater credit for the renaissance of this idea than to the late Dr. W. G. A. Bonwill, of Philadelphia, who, against tremendous odds and much opposition, fought to establish these principles underlying occlusion which we so readily concede to-day.

The department of bacteriology has teemed with interest during the last twelve months. Possibly it is no exaggeration to say that it has enlisted more interest in a greater number of men than ever before in its history in regard to dentistry. There is a near kinship between serum therapy and preventive dentistry, and this will attract the attention of the profession more and more as we become familiar with bacteriology. And again, a possible solution of that ever-present bugbear, pyorrhoëa alveolaris, may be hidden within this department of science.

Now as to legislative affairs; most acts of legislation in regard to dentistry prove a forward step for the profession. We seem to mount in an ascending spiral from event to event toward that high plane of ethical purity to which we all aspire. From the case of the International Tooth Crown Company to the decision given recently to the Illinois State Board of Dental Examiners there has been a progressive strengthening of the ethical standing of the profession which should be gratifying to us all. In this connection we should give full honor and a just meed of praise to Dr. J. N. Crouse for his devoted work in regard to both of these cases. He was primarily connected with the first case, and was a most potent agent in bringing about the decision in the second case. And just here I want to congratulate the profession most earnestly on the victory won recently against an institution in Chicago which was conducting a work in opposition to law and to the ethics which should gov-

ern such bodies. Every step of this kind is a tangible gain which strengthens the honor and dignity of our chosen profession.

It is my privilege to draw your attention to two important dental meetings which the near future holds for us. In the early days of the coming year the Odontographic Society of Chicago is to hold one of the largest and most important meetings ever held in this country and I am reliably informed that no expense or pains will be spared to make this event memorable in the history of dentistry.

Also, in 1904, at St. Louis, an International Dental Congress will be held. These two gatherings will mark epochs in the history of our profession and it behooves every member of this society to lend a hand and to be present at both.

I cannot, in justice to myself or to you, close these remarks without thanking you one and all for the courtesies and consideration extended to me during my year in office. I have not only felt it an honor to be your presiding officer, but at all times it has been a pleasure and an inspiration to perform the duties of that office, thanks to the generous spirit of fellowship I have met on every side.

To-day we round out one period and stand at the threshold of another. If we look with pardonable pride on the one just completed and those other years which stretch behind it, there should also be a sense of pride in going to meet the new months which are before us—a pride which will not permit us to do less after having done so much—a pride which will constrain us to put forth nothing less than our best for the realization of those possibilities and for the adding of one more useful year to the history of our honored society.

PROCEEDINGS OF SOCIETIES.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

On the afternoon of August 13 the following papers were read: "Porcelain Enamel," by Dr. N. S. Jenkins; "Inlays vs. Gold Fillings," by Dr. J. W. Wassall, and "Porcelain Inlays Using High-Fusing Bodies," by Dr. Paul Guye.

DISCUSSION.

DR. T. G. PATTERSON:

Previous to a year ago I had been very conservative with regard to porcelain work, having confined it principally to the six anterior

teeth. But I visited Dr. Jenkins, and through his kindness I was privileged to see him work for several hours, and since then I have attempted his method, with very great success, on bicuspid and molar teeth. Switzerland is the playground of Europe, and I have seen porcelain work from all the leading dentists and have made memoranda regarding it. During that time I have seen forty cases of porcelain work by Dr. Jenkins, and with one exception I have never seen the slightest discoloration, and in point of density and contact I have seen no sign of failure. From the time I first became interested in dentistry I was always under the impression that no work could be carried out otherwise than with the Richmond style of crown and bridge. Since meeting Dr. Jenkins I have commenced making porcelain crowns with great success, and I have been amazed at the density of his porcelain. I was always given to using a high-fusing material before that. The density is sufficient to scratch glass.

DR. W. MITCHELL:

I have been somewhat interested in porcelain work for the last thirty years, and in connection with inlays I think I have tried nearly all the materials. To Dr. Jenkins is due the greatest amount of credit for bringing this class of practice so prominently before us all and for perfecting the material. That his material occupies a place in our armamentarium for artistic appearance goes without saying. There has been introduced comparatively recently a high-fusing inlay, and this has its place as well as Dr. Jenkins' material. The high-fusing has some advantages; that it is more porous is due to the fact that it is not prepared as nicely as Dr. Jenkins' material. With regard to the finish of an inlay that probably is not contoured quite perfectly or requires some little change, we must accord to Dr. Jenkins the credit of being able to polish it down and restore the surface. There are a number of points which might be gone into in connection with this matter. Speaking of the comparative merits of the high and low fusing, I have used Dr. Wassalls' method in connection with crowns and have found it worked very nicely, but the coefficient between the teeth and the enamel is so disproportionate that it resulted in a great number of apparently small checks. That was owing to the lack of coefficient between the basal portion of the work and the superimposed portion. With the higher fusing you do not get that. When I

use an American tooth I use the high-fusing, but when I use an English tooth Dr. Jenkins' enamels undoubtedly answer most admirably. Dr. Jenkins has spoken about a method of making a Richmond or collar cap crown, one which I hardly think is necessary. We have found that it is hardly ever necessary to use a collar crown. We get practically the same results in the majority of instances without the collar capped crown. If you take a deep band you are liable to cut the dental ligament and cause trouble, and especially in an anterior tooth you are liable to cause recession of the gum. If you use a short band you have a nidus for food and then more or less of an irritant under the margin of the gum. If you cut the root down on the anterior portion almost or quite to the dental ligament you can put a plate on and fuse upon that and get results I have never been able to attain with a collar-capped crown. For the last eight or ten years, except in occasional cases, I have not used a band on any of the anterior teeth, and the results, from the standpoint of comfort to the patient and the ease with which the operation can be performed are very great. The fusing of porcelain above the plate and round the pins is a good thing. We retain the translucency of the teeth and we can put our crown into almost any position, even if the root is out of position. We can align it with the other teeth and fuse porcelain round it and get a translucent condition obtainable by no other method. Dr. Jenkins' method has opened up great possibilities in porcelain work.

DR. GOSLEE:

The subject of inlay work, particularly that of porcelain inlay work, is interesting to every progressive dentist at the present time and will be much more so in the future, because without doubt the field of porcelain restoration opens up great possibilities. We on the other side of the water believe in the higher fusing bodies, and that they have advantages which the lower fusing bodies do not possess. The cards passed round during the reading of the paper will show one of the points I want to make. In the insertion of a filling of any kind we must have first of all marginal protection. Here is a cube of high-fusing body—I do not know whose—and a cube of Dr. Jenkins' body. If you will observe them you will note the greater stability of shape or form in the edge of the high-fusing body than with the low-fusing body. Another thing which gives the high-fusing body an advantage is the stability of color. With

the low-fusing bodies, if you carry the heat the slightest degree beyond that at which the porcelain is properly fused, you are likely to lose your color, which is not so true of the higher fusing bodies. Another advantage of the high-fusing body is the translucency. The lower fusing bodies possess a greater density of structure, and it is that which diminishes the translucency. You can illustrate that very easily by a comparison of American teeth with English teeth. If you crush them you will see that the S. S. White tooth is more porous than Ash's, and it is the presence of air in the structure that makes it more translucent. There is just one advantage Dr. Wassall overlooked, and that is the adhesive property of the cement as a support to the weakened walls of tooth structure. That is a very important consideration. If it is possible to adapt an inlay or filling to remaining portions of the natural tooth and postpone crowning until a subsequent period, that is without doubt an advantage, and it is through Dr. Jenkins' efforts that inlay work has reached the pinnacle which it has. Porcelain crown work opens up an opportunity for more artistic results in crowning teeth than we have been able to get before. It is conceded that a band adds to the strength of the attachment between a crown and a root. It prevents a dissolution of the cement and the ultimate occurrence of a fracture in the root. For that reason the Logan crown on our side of the water is almost entirely displaced by a crown with a band. If we did not have porcelain, it would be necessary to employ the Richmond method. It is impossible for us to construct an artistic crown when we place gold at the back of a porcelain facing, because the gold not only destroys the translucency of the facing, but makes it impossible to match the color of the natural teeth, and we invariably have a dark blue line along the rounded edge between the gold and the porcelain. That is entirely overcome by the porcelain crown, because the back of the facing is covered with a translucent material. In the porcelain crown we have a greater degree of strength for the reason that the porcelain facing is not attached simply by means of little platinum pins. Dr. Jenkins referred to adapting the cap for a porcelain crown to the end of the root by means of taking an impression of it and swaging, and also of trimming the model to get a reproduction to prepare the cap. I can hardly allow that to go unchallenged, because if you attempt to trim a plaster model to reproduce the shape of the root there is a

good deal of guess work about it. Dr. Mitchell has mentioned that you are liable to have recession of the gum from the use of a band, but I do not think you will have that if the band fits the root. In 90 per cent of the cases where we do find irritation the band does not fit the root.

DR. W. A. CAPON:

I have seen a good deal of work done eleven or twelve years ago with high-fusing material, and it has been a pleasure to see it in first-class condition, not discolored, and doing splendid service. When you can go back that far and prove that the work is standing, what more do you want? You must be particular as to where you put porcelain. I agree with Dr. Jenkins with regard to working directly on the teeth. I see some advantages in large cavities in working with models, but as a rule you get better results by working directly on the teeth, and it is artistic and beautiful work and work you expect the patient to pay for. Therefore, why not do it yourself, instead of delegating it to some one else? The artistic portion of porcelain work is the finish, the contour, shading, etc. One of the things which makes porcelain work so successful is proper shading. You can easily burn the color out of porcelain, but not with a high-fusing material. I had intended to show you work that was accidentally burnt and yet the texture of it is perfect. I am not saying anything against what Dr. Jenkins does. His work is most beautiful and we could not wish for anything more perfect, but I feel that we who have been using high-fusing porcelain so long cannot go back on what we have done, especially when it has rendered us such excellent service. Those who are entering upon the work can make their choice. If you think you can work Dr. Jenkins' method better than the high-fusing method with the platinum matrix, do it. Dr. Jenkins puts porcelain in cavities in any part of the mouth. I do not. That is a matter of judgment. In the anterior teeth and round the bicuspid I have hundreds of cases which have been in use for years, and I do not know what more can be desired. The teeth have been saved and the patient has not been hurt to any extent. I must refute the idea of high-fusing bodies being a delusion. If I had here my scores of patients who have gone beyond the ten years' limit with high-fusing porcelain, probably you would be convinced. With regard to the pins and loops I have seen here to-day, in some cases they may have

been of advantage. The first work in porcelain done in 1887 was done entirely by pins. There is nothing new about this work, but it is coming into more general use through discussion.

DR. W. A. SPRING:

I have been requested to open the discussion on Dr. Guye's paper, and I welcome with pleasure every champion of high-fusing porcelain. It seems to me that the author has very clearly shown that the so-called objections to high-fusing porcelain are only visionary, and that there are certain decided advantages in its use. The platinum foils on the market are very harsh and stiff, and this fact has driven enterprising men to seek something better. Dr. Guye has found this in the William's platinum gold foil, which is soft like gold. I am prepared to believe his statement, because I have often found platinum foil which was quite as soft as gold. It is furnished by Ash & Sons, and a proof of the remarkable purity and softness of the metal furnished by them can be seen in their platinum plate. A piece of their 29 American gauge pure platinum is so soft that you can roll it in the palm of your hand like so much lead. The edge of a plate made for continuous gum work cannot be filed without warping the whole plate. The baking of porcelain on it causes warping. At my request Ash & Sons made up several specimens of platinum plate, variously alloyed with iridium, from $\frac{1}{2}$ per cent to 3 per cent, and that alloyed with $\frac{1}{2}$ per cent was the best platinum I could find. Dr. Guye has called attention to the translucency of the high-fusing porcelain, and I think it is not disputed. He has, however, failed to mention one other point, the natural appearance which may be secured in the high porcelain. You are all aware of the small minor depressions on the surface of the human tooth, and this unevenness can be copied to a remarkable extent in baking a body such as Dr. Guye mentions. He also spoke of porcelain powder, putting it into the matrix while in position in the tooth. This seems to me unnecessarily clumsy, and the time saved by making two or three inlays at a sitting and delegating that to the laboratory workman seems to me valuable.

DR. CAPON:

I forgot to mention that point about the platinum. I think the quality of the platinum has driven more people to the use of lower fusing bodies than anything else. I am glad you find it is possible to get good platinum on this side of the water. We have a place on

the other side, and I have used their platinum for the last ten years and it has never changed. I would not blame anybody for discarding high-fusing porcelain if they were using hard platinum.

DR. MITCHELL:

There is one point I wish to correct in Dr. Goslee's speech. In the majority of cases where we find the roots fractured through not using a band it is owing to the fact that the pin does not fit the root. I quite agree with him as regards the inadvisability of using Logan crowns. I brought the first lot that came to this side of the Atlantic over eighteen years ago. They will split the roots because of the erroneous principle upon which the pin is made. By having a series of instruments, especially for conical-rooted teeth, it is possible to turn up pins in the lathe and make them fit the canal the whole way up, so that when pushed up with the fingers there is no motion at all. Just in proportion as they fit the root you relieve the root of any strain and reduce the possibility of fracture. Where there is a strong outward bite I occasionally make a half band to go at the back of the tooth, and I thus relieve most of the strain from the root.

DR. BROPHY:

I do not wish to enter into a discussion of the merits of the different kinds of porcelain, high or low fusing bodies, but to say a word which I think will be of interest to many of the members, since it comes from a man who is one of the old investigators and one whose judgment I think you will regard highly. I refer to Professor Jonathan Taft. (Cheers.) It is very gratifying to us to have his name received with applause, and I assure you that this expression of your admiration for him will be conveyed to him and he will appreciate it. It was the expectation of Professor Taft to be here, but his health was too poor to enable him to make the trip. Professor Taft, on the floor of the National Dental Association, said that he was delighted with the progress made with the use of porcelain inlays. It had added to dentistry a most important feature, and it made it possible to set aside that very objectionable material that had been used so largely for the preservation of teeth. He considered that porcelain in the hands of skilled operators would be a substitute for the lower classes of materials, amalgam, etc., and it would lessen the labor of the operator, so often taxed beyond endurance, in the insertion of large gold fillings, and would also

lessen the tax upon the patient. Further, he said that his observations convinced him that under the influence of porcelain, tooth structure did not so readily disintegrate, or, in other words, that the recurrence of decay was not so noticeable about the porcelain inlay as it was about any metal that had been used for the purpose of preserving teeth.

DR. GORDON WHITE:

I will frankly admit that I am not a porcelain operator. Ten or fifteen years ago I made perhaps a dozen, and 20 or 30 per cent were failures. The opinion between high fusing and low fusing seems to be pretty well divided. From what I have seen of patients from a number of skilled hands I have never seen anything that surpasses Dr. Jenkins' work, and, not being a worker in that material, I have been unprejudiced and impartial in my criticism of the work that has come before me. Whether low fusing or high fusing, I have yet to see a porcelain bridge which has been used for any length of time in which the bridge was not cracked, and consequently I have never taken up that process in bridges.

DR. N. S. JENKINS:

It is not a question of a theory, but a question of an individual case. There are many instances where it is well to avoid porcelain crowns, but there are other cases where they are indispensable and where they are indispensable they obtain greater strength and security from having a certain portion of sufficiently solid porcelain. With regard to the method of preparing the crowns mentioned in my paper, the reference is only to two or three of these individual cases. They chanced to be such that bands were indispensable, and in these particular cases it happened to be the best practice to prepare the roots in the way I have related. One can easily see that it is possible to get, by the method I suggested, an absolutely perfect impression. The hard wax presses against the root as nothing else will and the gum is so soft that it gives way. If it is perfectly done there is not the least movement of the cap after it has been prepared for the root, and no line between the wall of the cap and the root itself. It is true that porcelain enamel is not quite so transparent as the high-fusing porcelain used in the manufacture of artificial teeth, and that for inlay work is an advantage. I do not want it translucent. When the inlay possesses that slight degree of opacity it is far less changed in its apparent color. The most serious defect of

all the high-fusing porcelains I have ever seen is the discoloration which continues. As to the sharpness of edge to be obtained by high-fusing porcelain, I think it is true that in the hands of most men who have not had a wide experience with low-fusing porcelain a sharper edge can be obtained, but always a sufficiently sharp and exact edge can be obtained by a skillful workman in low-fusing porcelain, and even if it were not quite so sharp it would have its compensations in its far greater strength. The great advantage of the system which I have brought forward is that it can be used everywhere, and everywhere it is superior to gold.

DR. WASSALL:

My first use of porcelain inlay was for a cavity in a posterior tooth, because I saw that all such localities were difficult to fill with gold.

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Schiller Building, June 3, 1902, with the president, Dr. Elgin MaWhinney, in the chair.

Dr. B. J. Cigrand read a paper entitled "The Failures in Crowns and Bridges When Not Due to Faulty Construction."

DISCUSSION.

DR. J. W. WASSALL:

If crowns and bridges were constructed without faults would there be any failures? This is the question which is naturally suggested to us by the title of the paper. The failures I observe the oftenest, when the crowns or bridges have been constructed properly, occur some time after they are made and result from the wearing of the natural teeth to such an extent that there is greater pressure upon the crown or bridge, and in that way the porcelain facing is broken off, always a very disagreeable thing for patient and operator both. This is something that we must always expect, because a crown or bridge will not wear, especially in an acid mouth, as rapidly as the natural teeth. Another failure is due to a loosening of the roots to which the bridge is attached. This occurs in patients particularly who are getting on in life and who do not give their teeth proper care, not using the toothbrush sufficiently to keep the gums hard. In these cases we have impair-

ment of the whole crown or bridge, possibly a movement of the bridge or crown from its position until it is unsightly or useless.

The essayist spoke of the harm of fastening teeth together or wiring them together in a bridge, and regrets that it is necessary to make so many bridges. A bridge is a wonderful restoration of lost teeth. It is marvelous to observe how well people get along with them, and to see how many are worn with comfort and how indispensable they become to the wearers. Many people put up with strange things. I remember many years ago of having a patient come to my office who was wearing the fragment of a lower plate. It was less than two-thirds and she had worn it for fourteen years, and assured me that she could masticate anything.

The author of the paper has brought out a point I have never heard before mentioned in a public way—that is, the making of a small canal to hold the dowel for the crown. Most of the instruction we receive in regard to preparing for the dowel is to have the root canal larger than the post, to make the post fit loosely, sacrificing considerable dentine. I agree with the recommendation of Dr. Cigrand in that respect and I believe it is sound teaching. I am not in favor of crowns without the band, because I have seen so many cases where the roots of teeth have been split from this cause.

DR. F. H. SKINNER:

The paper brought out very many excellent points and I think we have all profited by the teaching of the essayist. There is one point, however, upon which I differ with him, and that is the subject of weak roots. If a root affected with pyorrhoea is thoroughly cleaned and the tissues become healthy around it, the mouth will remain healthy longer by adjusting a bridge, making the roots firm and rigid, than it will by any temporary or removable appliance, for a removable appliance is a constant strain on the roots.

I have in mind one patient I worked for in 1894 who had three lower teeth which were all affected with pyorrhoea. The patient has been wearing a full bridge on these three teeth and the roots are in better shape now than when the bridge was put on.

I have another patient who has worn a bridge for two years, and almost any of the roots could have been extracted with the fingers. By putting on a bridge which extends from one side of the arch to the other the patient now has a healthy mouth. I think those roots which are crowned and solidly bridged are more service-

able than when removable bridge work is used, as there is great strain whenever a band or spring is removed.

DR. GEORGE B. PERRY:

The essayist has brought out many good points, but there are still others that he has not mentioned. It is a question in my mind whether it is not an error of judgment in adjusting too many bridges. Every space does not indicate a bridge or a crown. The temperamental condition figures very largely in regard to the question as to what should be done for the space. The condition of the contiguous tooth or teeth should be considered. If a patient is anemic, his circulation is poor and sluggish it is readily apparent that a bridge would be a poor substitute for the natural teeth. In placing bridges in spaces to reconstruct articulation one should bear in mind the fact that the teeth should be very firm and strong. I have seen cases where extensive bridges were placed, and unless those bridges were strongly fastened at the ends they have in a short time loosened the teeth. The force of occlusion is another point to be considered. In preparing natural tooth crowns for bridges where you are making telescopic crowns, to my mind, under almost all circumstances, the teeth should be devitalized. The exceptions are perhaps third molars, which are not fully erupted and contoured, and what are commonly known as peg-shaped teeth. The grinding necessary for an artificial crown in many cases will cause death of the pulp. The rapidity with which caries has progressed in the mouth and many other points should be considered before the operator puts on a bridge. While bridges have their place, as the essayist has said, yet I think they may be destructive as well as constructive.

DR. A. W. McCANDLESS:

I do not know as much about crown and bridge work as I thought I did eighteen years ago, when I commenced making them.

I would take exception to one statement made by the essayist in regard to setting crowns with gutta-percha. Dr. Matteson has been using gutta-percha in setting crowns for fifteen years, and it is certainly better for this purpose, and especially for bridges, than anything with which I am familiar.

Of course, as the previous speakers have said, a great many things must be considered in making crowns and bridges. I make it a particular point to tell my patients that I do not know how long

the work will last. I say to them, "This work may last six months, it may last a year or several years; if you can afford to have it done, you can afford to take the chances as to its permanency."

I called in one of my neighboring dentists about three years ago and showed him what I was doing in the way of saving the roots of a molar. This tooth was banded with a gold band and had been filled with amalgam. I took the band off, removed the amalgam and found that the distal root was loose, so much so that my compressed air almost blew it out. I explained to the patient that I might be able to save it for her. I prepared a cap for each root separately, united them and built up a porcelain crown. The dentist referred to said that in about three months she would return with the tooth in her pocket. I said to him that I did not care if she did; that she understood the situation, I had not tried to deceive her. A few days ago I called in that dentist when the patient came to my office and asked him to look at her teeth, and that tooth is as firm as any tooth in her mouth. We might say that this was an exceptional case and one cannot tell in what cases he will obtain the best results.

I would like to hear from Dr. Matteson as to his experience with gutta-percha, because he has been using it for a long time.

DR. A. E. MATTESON:

I have been setting crowns with gutta-percha for a great many years. There are many points in the paper that I would like to discuss, but the essayist read it so rapidly that it was impossible to grasp and remember everything.

He does not place enough stress upon the use of iridio-platinum and the fitting of the post so that there will be no play.

In regard to the use of gutta-percha, it has sometimes happened that for various reasons I have had to remove crowns where they had been on for eight or ten years, and this gutta-percha presented as even an impression of the ends of the roots as could possibly be taken with plaster. I see no reason for not continuing the use of gutta-percha, although there are some cases where I use cement. I think fully 90 per cent of my crowns and bridges have been attached during the last fifteen years with gutta-percha. But the same objection will hold with gutta-percha as with cement in the excess around the root. One may be just as faulty and just as objectionable as the other in that respect.

DR. N. J. ROBERTS:

I recently removed two molars which I crowned seventeen or eighteen years before, and I found the cement in practically as good condition as when the crowns were put on. The pulps had been destroyed and the loss of the teeth was due to disease of the tissue around the roots. The success of bridge work depends largely in having the work made strong and rigid and placing it on teeth where the pulps are alive and the teeth in good condition, and where the pressure is not greater than it should be normally.

By normal pressure I mean not greater than the roots would stand without producing irritation. There can be no question as to the life or permanency of bridge work, and the failures are due almost entirely to placing bridges on poor roots or roots where the pulps are decomposed, so that in less than twelve or fifteen years the roots come out.

DR. C. E. BENTLEY:

I think the manufacturers of these teeth that were particularly spoken of by the essayist would do the profession a service if the pins were made of iridio-platinum instead of platinum.

The essayist has certainly verified my clinical experience with reference to gutta-percha. I have been using it more or less for fourteen years, as taught me by Dr. Matteson. But I do think gutta-percha anchorage is reinforced by the addition of cement, especially in the anterior teeth, where the occlusion of the lower teeth is against the lingual surface. In my experience gutta-percha gives way and loosening occurs. If iridio-platinum were used in making the bands secure, with gutta-percha plus cement, it would be an addition to the anchorage.

DR. A. C. HEWETT:

I want to enter a plea for poor and lame teeth and their preservation. I do so after an experience with my own mouth of over twelve years.

I was unfortunate enough to lose my third and first lower molars and a second bicuspid, leaving a second lower molar standing alone. I was not impressed favorably with bridges when first introduced, but as my teeth were failing and my stomach complaining in consequence, I concluded to have one. I went to one of my professional friends, but he entered a strong protest against using the second molar, which was frail, as one of the abutments. I

asked him how long, in his opinion, such a bridge would last. "Well," he said, "perhaps a year." "Are you sure it will last a year?" "Yes, I think it will." "Well, then," I said, "put it on, because if I secure good mastication for a year I shall not consider it a failure."

The failure of bridges will depend very largely upon what we require of them. A pair of boots which serve us for six or more months we do not consider a failure. It is too much the fashion of patients to require that a bridge shall be everlasting, irrespective of proper care on their part. That tooth was so loose that I could have at any time extracted it with my thumb and finger, and my fingers are not Japanese either. I determined to have that tooth used, and twelve years have elapsed without its having been troublesome. I suggested to the dentist that instead of using one tooth as the front abutment, that he use two which were strong. The purpose was to give stability, so that it would not move or sway laterally. The two teeth, being strong, held the bridge in firm position. Then I told him to be careful that the occlusion of the artificial teeth should be on an alignment with the root, that the occlusal force should come as nature demanded it. Having had that experience, and seeing some young men here, I suggest care in alignment and stability against lateral swaying as an aid to strengthen frail supports. Induce patients to believe that if bridges do the work well for one, two or three years, it is a success, and not a failure.

DR. HART J. GOSLEE:

We have listened to a splendid paper on a phase of this subject which is always interesting, that of failures, particularly because it is from our failures that we learn most. I should say that when crowns and bridges fail from other causes than that of construction, it is due to injudicious application, and I think that this covers the whole thing in a nutshell. There are many bridges inserted that have no place in the mouth. Particularly is this true of extensive bridges. This work is along the line of mechanics, and when we place a bridge in the mouth, we are depending upon the roots which we have as supports to do the entire work, and it would be unreasonable to expect a few roots or teeth to do the work of many for any length of time.

As an evidence of the injudicious application of bridge work, I have recently had occasion to see a case where ten anterior teeth

were supported by the two first molars, and, strange to say, worn with success, so far as the patient knew, for four or five years. What was the result? These two teeth were lost entirely, yet they were sound when the bridge was constructed. So it narrows itself down to a question of judgment and experience, and until we have acquired these we cannot hope to do bridge work successfully.

The essayist has mentioned a point with regard to the attachment of the dowel of ready-made crowns to the roots, whereby he aids the mechanical attachment by bending the dowel. There is no question but what such a procedure mechanically adds to the integrity of the attachment, but if the base of the crown is well adapted to the end of the root, and the dowel is entirely surrounded with a material of uniform resistance, the attachment will be secure enough without the dowel resting against the walls of the canal. I believe that entirely too much tooth structure is destroyed in the construction of dowel crowns. How often do we see a canal reamed out until there is but little remaining to the root except its walls, which is entirely unnecessary.

DR. A. E. MATTESON:

Dr. Bentley says he would use gutta-percha and cement at a temperature of about 75° . In using gutta-percha and cement in combination, part of it demanding one temperature, and part of it at another, we do not get the best results of both. We must heat gutta-percha to ninety-five degrees so as to soften it and be able to fill a canal, but if we heat the post or crown to ninety degrees in combination with cement what is the effect on the cement? The cement will harden before we get it in the mouth, if we make it of the right consistence. They have got to have a different temperature in order to work each to the best advantage.

DR. CIGRAND (closing the discussion):

I can only say, in conclusion, that Drs. Bentley, Perry and Goslee, were nearer to the subject-matter than some of the other speakers. I tried to avoid, as much as possible, any reference to the construction of a bridge, emphasizing the fact that I took it for granted that the bridge or crown was properly constructed; that the root canal was properly prepared and filled, and that the subject of occlusion and articulation was properly observed.

Dr. Perry spoke of a knowledge of temperaments, which is becoming more and more essential to the prosthetist. Any dentist,

who does not recognize the difference between a sanguine and lymphatic temperament is sure to have failures. One person is made up in such a way that his teeth are loose to begin with.

In reference to the remarks of Drs. McCandless and Matteson, I do not advocate the use of gutta-percha, excepting as a disk, where the basal portion of the crowns are brought in conjunction with the tooth. I use cement on the post as an anchor, and I use gutta-percha for no other purpose than simply as a protection against the influences of the oral secretions on the cement. Used in this way, they have given me excellent service. The work must be properly done, and good judgment is required; and, possibly, if you follow the methods that I have recommended, your efforts may be crowned with success. There must be a better understanding on the part of the profession in regard to this subject. Many of the other queries asked are clearly answered in the paper.

Dr. W. E. Griswold, of Denver, Colorado, read a paper and exhibited models and improvements in the Griswold System of Removable Bridge Work.

DISCUSSION.

DR. B. J. CIGRAND:

I am especially pleased with the removable denture in bridge form, allowing cleanliness, because the hygienic condition of bridge work is the primal feature in its success. I believe we are coming nearer and nearer every day to an appreciation of the fact that all artificial substitutes must be more or less removable when they are large. It is in accord with my paper, this evening, wherein I stated that if the bridge is large, it indicates a removable piece, and I firmly believe that bridges as now constructed have insufficient anchorage foundation.

The mechanical principles Dr. Griswold has given us are correct, and can be applied to the mouth.

DR. A. N. DAVIS:

It was my fortune a number of years ago to become personally acquainted with Dr. Bonwill, and I became very enthusiastic over removable bridge work. I afterward became acquainted with Dr. C. L. Andrews, who was connected with Dr. M. L. Rhein, of New York, and I put in one summer there studying particularly removable bridge work. It was constructed according to the plans of Dr. Bonwill, with a few modifications of Dr. Andrews.

I would suggest making the clasps narrow, using 14-gauge round-clasp metal, and roll it out to No. 20, which will make a narrow clasp with a round edge to it, which will slide over the tooth and not cut the enamel. If it is made to fit the tooth too closely, so that the saliva cannot pass between the tooth and clasp, there is more liability for the tooth to decay. Make the clasp to touch the tooth in four places, and, in masticating, the saliva and juices of the food will pass between, keeping the spaces fairly clean.

DR. A. W. HARLAN :

Dr. Griswold, in describing his system of removable bridge work, omitted a point which I consider of great value, and that is from the standpoint of the patient. If you have a fixed bridge, in many instances the patient will not keep it clean, and sometimes it is impossible to keep these bridges clean, on account of the method of their construction, and a removable bridge, whether made according to the system of Dr. Andrews, Dr. Bonwill or Dr. Griswold, you can take out, clean it, and also clean the abutments. This is of great value to the patient. It is almost a necessity for sanitary reasons.

I have seen Bonwill's and Dr. Andrews' removable plates and have inserted one or two of them in the mouths of patients, but up to the present time I must say that the Griswold system is more mechanically and mathematically accurate than any of the systems thus far presented to us.

DR. TRUMAN W. BROPHY :

I wish to refer to one of the models passed around illustrating the retention of a partial lower denture. While I have not used this method, it commends itself to me, because all of us know, who have had experience in the adjustment of that kind of lower denture, that they are difficult to get in place. They move so easily in the mouth, and produce absorption of the tissues upon which they rest, and are troublesome dentures to wear. The attachment Dr. Griswold has made for the retention of a partial lower denture seems to me to make the adjustment far more practical than I have ever seen, holding the teeth steady, so that the process of mastication may be carried on better than by the use of any other kind of artificial denture which could be adjusted. This attachment, it occurs to me, would be better than a band or crown fitting over the entire tooth, and it is easily adjusted to its place, so that I think it would serve most admirably.

DR. GRISWOLD (closing the discussion) :

I have put in bridges with the Bonwill system, by the Rhein and Andrews' system, and both Dr. Rhein and Dr. Andrews have discarded their own systems and are now using mine. Dr. Rhein has been using the Griswold system for over fifteen months, and he told me at a meeting of the Odontological Society of New York last January, that it had given him better success than any other method or any form of attachment he had ever used. He made a similar statement before the New Jersey Dental Society last July.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held October 21, 1902, at the Hotel Victoria, with the president, Dr. E. J. Perry, in the chair.

Dr. C. N. Johnson read a paper on "Internationalism in Dentistry."

DISCUSSION.

DR. E. R. CARPENTER :

I should very much have preferred some of the older and wiser heads than mine to have started the discussion on this very interesting and excellent paper of Dr. Johnson, which I have greatly enjoyed. It expressed sentiments that I approve of, and one that has been in my mind ever since I graduated from college, although I was not subjected to passing an additional examination when I came here from my college. I have a good deal of sympathy for many of the men who have to go through that ordeal. A man who is a natural student can do so without much trouble, but when he is not he may find it difficult to pass the State boards. I would be most pleased to see the profession adopt a universal standard of examination, so that students graduating from college, or those whose condition is such that they are obliged to move to different States or countries to practice, would not be subjected to an additional examination, especially when those examinations are mere matters of form, and are not true standards of a man's worth. A man who has been in practice in an active community for several years, and has proven himself a worthy member of that community, so much so that he is accepted by his colleagues in the same profession, and has attended dental societies, and written papers, when he goes to

a new community, where the laws are different, he is obliged to go through an examination

I am pleased that Dr. Johnson has brought this subject up, and has dealt with it so tersely and intelligently. I sincerely hope that it will be but a few years when the different States will all stand on the same basis, and a diploma from any college of recognized reputability will mean the universal right to practice where fate or circumstance leads an operator to settle.

DR. J. E. HINKINS:

I hope the time will come when there will be an international federation of dental examiners, the same as we have now an International Federation of Faculties, and that they may come together and devise a plan to elevate the standard of our profession, so that we may have a unification, especially in the United States, if not on the other side of the Atlantic. No one more fully realizes this than I do. When I went before the State Board of New York last winter, not having been as close a student as I might have been, in regard to preliminary work, I sweat blood one afternoon, but finally got through. It is humiliating to appear before a board and take an examination of that kind. There are so many questions asked which we all knew at one time, but our special lines of thought have been such that we have let many things go by. Some of the questions are stickers, and being a little nervous at the time, we cannot answer them.

I can see also where the public at large is to be benefited by the step taken by Drs. Brophy and Harlan and others to bring about this International Confederation. The public will receive better service. We will have better dentists. Our students will be better qualified, and we will have better men. We will have a more dignified profession, and I do not believe it will be very long before the dental profession will be one of the most dignified of the professional world. I say this because I am sincere, and only last night Professor Lorenz, of Vienna, made the statement that he was especially proud to see the efforts that are being put forth by the dental colleges of the United States to raise the standard of the dental profession. If he has noticed so much in a short time, it is certain that the colleges are doing good work. But we realize that he is a close observer and recognizes these things immediately.

As to the paper of Dr. Johnson, I enjoyed it very much. I think

the paper has been the keynote to bring this matter to the attention of the average dentist, so that he may see it in a different light from what he has heretofore.

DR. TRUMAN W. BROPHY:

I had no expectation of hearing such a paper as this by Dr. Johnson this evening. He did not intimate that he was going to read a paper on this subject. If he had, I would have brought some statistics that would have been interesting to the members of the society. This is one of the subjects that has more interest attached to it in these days than any other which occupies the dental mind. Notwithstanding all of the complicated questions in regard to State boards and licenses and bogus diplomas here and abroad, the great question to-day which interests the dental profession of the world is that of internationalism or international relations in dentistry. The very word itself has a tendency to broaden one's mind. I remarked on a previous occasion, and I repeat it now, that it is well for every one to get away from home now and then, so that he may look back and see himself as others see him. This question is becoming deep-rooted, and while some of the men engaged in dental educational work at first smiled incredulously when they were informed that such an organization was about to be effected, and some of them went so far as to predict a short existence for it, they have already learned that the men who were accredited delegates to the International Dental Congress of Paris in 1900 and who organized the International Dental Federation, and conferred upon it the power of organizing the International Commission of Education, the power also of organizing the fourth International Dental Congress, etc., realized the amount of work before them, and began their work with a determination to make it a success. And this success has already been realized. I suppose there are a great many Americans who never knew that the impetus given to dentistry in America was chiefly due to the French. The first activity in dentistry in this country came from France; yet too frequently Americans have said that we lead the world in mechanics; that we lead the world in digital skill, and various other statements have been made that cannot be substantiated. I recognize the phenomenal progress made the last half century in the advancement of dentistry and I know the conspicuous part Americans have taken in this great work. At the same time, I am not unmindful of the

splendid achievements of those abroad. This internationalism in regard to dentistry has not only taken deep root, but it is expanding everywhere.

Referring again to the question of mechanics, one of our professional friends read a paper this summer at the American Dental Society of Europe at Stockholm. He said that the Americans led in mechanics, and lead in digital skill. He did not remember that the railway locomotive was built by Stevenson, and the great Monitor that held in check the terrors of the Merrimac in Hampton Roads during the War of the Rebellion in the United States, which, perhaps, fixed the destiny of this republic, and made it possible for the Stars and Stripes to float in all sections of the country, was constructed by a foreigner. Who can tell what the effect would have been had the Merrimac pursued her course farther and destroyed the entire American fleet, which was made up principally of schooners of little consequence compared with modern warships. Who is the man who did this remarkable piece of mechanism which enabled the nation to stay the further invasion of the terrible Merrimac that played havoc with our squadron that morning at Hampton Roads? John Ericson, a Swede. If you should go through all Europe and see there the handiwork, the digital skill in sculpture and in art in all its forms, you would then realize or ask yourselves the question, Why should the Americans say that America leads in all of these things that require so high a degree of intellectual and manual development to produce? After associating with these delightful people, knowing their manner of living, visiting their homes filled with works of art of the highest order produced by their own people, I sometimes feel really ashamed of my countrymen when I hear them make utterances of that kind. It is not in good taste, it is indeed bad form for us to declare our superiority in dentistry over all the rest of the world. I am glad Dr. Johnson has read this paper to-night, and I trust it will be given broad publicity. It is the kind of paper that will promote internationalism in dentistry. It will promote fraternal relations with the people of the Old World, so far as our profession is concerned. It is much better for one to read this type of paper instead of telling people how big we are, how skillful we are, and how we excel others. It would be better if we could have less of this kind of talk going on at home, and when the great International Dental Congress convenes in 1904, I think

much will be done to curb that sort of talk among Americans. Dr. Johnson's paper should be read by every English dentist, who, a little more than other people, have held themselves aloof from the work of the International Dental Federation, although Mr. Harding, the president of the British Dental Association, and many other Englishmen were at the Stockholm meeting.

I received, on my return home, a note from Mr. Hutchinson, expressing his regrets in not being at home when we called to see him while we were in London; also a note from Mr. Charles Tomes, expressing his regrets at not being home. I am satisfied that if the right kind of spirit is shown toward these men, a great deal can be accomplished in securing their co-operation in the congress of 1904.

I do not know what the course of this paper will be; I do not know whether it will be possible to have it printed in French and English, or not.

I had the pleasure this summer of calling on Mr. Walter Coffin for a few minutes, and had a conversation with him. Perhaps it is unknown to some of you that he is the present editor of the *Journal of the British Dental Association*. He told me that the journal would be open for the reception or publishing of papers from dentists anywhere; and any paper of true merit that came to him he would be glad to publish as other dental journals do. I regard this as a great step in advance, because this journal heretofore has been almost exclusively made up of material or papers read before the British Dental Association. This new idea of accepting other matter will broaden the journal and help the British Dental Association. We may well keep in mind the work of the British Dental Association, inasmuch as it has about twelve hundred members, which is in striking contrast to the American National Dental Association. I do not know how many members were in attendance this year at Niagara Falls, probably not more than four or five hundred out of the twenty-five or thirty thousand dental practitioners in this country. The British Dental Association includes a very large percentage of the dentists in England, Scotland and Ireland. But when we speak of numbers, the greatest country in that respect is Sweden. Sweden has about three hundred and fifty dentists in the whole kingdom; about eighty-five per cent of them belong to the dental association. Sweden is the best educated nation on earth. They hold the record for general education. The masses are all educated. Only five Swedes out of every thousand are unable to

read, and these are generally sick children, incapable of receiving education. The professional men of Sweden are well educated; they are well prepared for their professional work. If possible, the paper of Dr. Johnson should be published in English and French. It carries with it good will and the right kind of feeling. It expresses our sentiments here. It extends the right hand of fellowship.

When we begin to talk about reciprocity in dentistry between the nations, the best thing we can do here is to set a good example by having such a condition brought about between the different States of the Union. Dentistry is the only profession, except that of medicine, whose members cannot go from one State to another to practice without going before the State Board in the State to which they move, and pass an examination. A lawyer, who practices in Illinois, may go to any state of this country and practice, if he has a certificate of admission to the bar of Illinois from the Supreme Court of the State. If a dentist desires to go from Illinois to Indiana, or from Illinois to Minnesota, he must appear before the board of the State to which he goes and be examined. We must bring about reciprocity between the different States of the Union before we begin to talk about universal recognition of dentists throughout the different countries of the world.

DR. JOHN C. BANSLEY, of Toronto, Canada:

I am not a speaker, but I wish to say with reference to the remarks that have been made in regard to reciprocity, that when it comes to including Canada, you will meet with difficulty. The dentists who dominate things there are what we may call hard-shell Scotchmen, and many of them imagine that your dental students in America go in at one end of the dental colleges and come out at the other end with diplomas. We have a graduate there from Chicago, Dr. Webster, who has done a good deal to dispel such ideas, because he has shown us what you can turn out of your dental colleges, and he is really one of the best men we have. Over there there is not a man who stands higher in the estimation of Canadian dentists than Dr. Johnson. We think a great deal of him. We think a great deal, also, of Dr. Brophy and others who have done so much to show Canada what kind of men you have over here.

DR. A. W. HARLAN:

Time is the great leveler, and when the American invasion of

Europe began, from a dental standpoint, digital skill and knowledge of the operative treatment of diseases of the teeth was not so widespread in Europe as it is now, and from the phenomenal reputations gained by a few men who possessed a particular degree of skill, we have been led to pat ourselves on the shoulder, expand our chests, and talk a great deal. But within the past twenty years, the knowledge of operative dental surgery and the capability of performing creditable operations is so great that America does not possess the sum-total of that kind of knowledge, and I think it is due largely to an increase in numbers, in some respects, and largely to the invasion of Europe by a good many inferior men from this side of the water, so that they do not stand out in that bold and leonine style that the early invaders did.

With reference to the subject of internationalism in dentistry, it is working it out for itself. It is bound to do so; it does not make any difference what man or set of men put up their hands and say it shall not be done. The idea has gone out, and is spreading everywhere. It has been only about forty years since we commenced to have international medical congresses, and the medical profession in the United States, in Denmark, in Germany, in Italy, France, Russia, England and other countries where medicine is practiced, did not know much of each other, and so a few of the leading men of the different countries started the first international medical congress. They are to hold the fourteenth in Madrid next April. It is a fixed fact. Nobody thinks anything about it, except those who have read the early history and struggles, and know what the difficulties were in the way of establishing regularity of system in holding medical congresses. Following the establishment of an international medical congress, we had an International Congress of Hygiene and Demography, an International Congress of Physiology, an International Congress of Otology and Laryngology, an International Congress on Syphilology and Climatology, and so on, until, finally, we had an International Dental Congress. Every man in this room, I guess, was practicing dentistry before the first International Dental Congress was held, and you know what heart-burnings there were throughout the whole country by the establishment of the First International Dental Congress, which was a little bit of an affair. In 1881 the American Medical Association established a section which they then called the Section of Dental

Surgery. Dr. Brophy was present at that time, but there were men in the dental profession and in the medical profession who belonged to that section, and others that hung on who were neither dentists nor physicians, and who thought that the sun was going to rise and set and the moon and all the constellations in that little section. Well, the dentists went along, they talked about things, and finally there was an International Dental Congress held in Paris, in 1889, and later it was proposed to hold a dental congress in Chicago, in connection with the World's Fair. Three or four men in this State, we will say, and a few outside of the State, were bound that it should not be called a congress. They carried their point for a long time, until, finally, when the committee having in charge the organization of that congress, met Mr. Bonney, who was president of the World's Congress Auxiliary, they said we are going to call this the World's Columbian Dental Meeting, out of deference to the dentist who is half medical man and half dentist. Mr. Bonney said, "Excuse me, gentlemen, we are going to have some congresses, and you have got to call this a congress." That settled it. Mr. Bonney said that three people could come together and hold a meeting, but it was not a congress. He settled the question, and instead of calling it the Second International Dental Congress, they compromised by calling it the World's Columbian Dental Congress, because it was under the auspices of the World's Exposition. I was born with these matters, so to speak, so that I know something about it. I said "I will live to see all of these things righted after awhile." Finally, when they wanted to hold a congress in Paris, what did they do? They wrote to the men who were connected with and closed up the World's Columbian Dental Congress, and wanted to know if they could have authority to organize a congress in Paris. That authority was given, and they went to work and organized a congress in Paris. They invited everybody to attend it. The Odontological Society of Paris, and the Odontotechnical Society of Paris were the largest organizations, (at that time they did not have any national society in France), and so these two societies united, and selected various people to organize this congress. After they got through with the congress, they had approximately twelve hundred and fifty or twelve hundred and seventy-five members. One of the things they did on the last day of the congress was to adopt among other things about twenty-four resolutions.

Resolution No. 13. This resolution says that there shall be named at the last sitting of the congress a commission of nine members to examine conditions for the constitution of an International Dental Federation, and propose the same for adoption by the national committees and prepare for the next International Dental Congress. This was adopted.

Resolution No. 14. "The International Dental Federation, outside of all national committees, will be represented by an Executive Council; the first Executive Council, comprising nine members, will be named by the members of the Third International Dental Congress in general meeting, Tuesday, the 14th of August, 1900, and its powers will expire on the opening of the Fourth International Dental Congress, *which it is charged to organize*. This general meeting will be held the 15th of August, at half-past nine o'clock in the morning, at the dental school in Paris. The Fourth International Congress will take place not later than five years from date in the country best suited for the Executive Council, after the choice of the many invitations addressed to it by the divers national committees and after correspondence with them. In no case shall the decision be made later than 1903."

The Louisiana Purchase Exposition, which is to be held in St. Louis, Mo., to commemorate the cession of that country to this, after it had been established and put on its feet, the State of Missouri, the city of St. Louis, the United States Government, and all other countries that have been invited to participate have decided that there should be held, among other things, various kinds of congresses. In pursuance of their idea, a few months ago a dentist from the city of St. Louis came to Chicago to see Dr. Brophy and myself with reference to what could be done toward securing an International Dental Congress, that is, the Fourth International Dental Congress, for St. Louis. Prior to that time, the chairman of the committee of seven from the Missouri State Dental Association that had been appointed to promote this congress, wrote me and asked me, and I have the letters now, if I would undertake to assist in the organization of this congress and take a salary to do it, because they felt somebody would have to go to work and do it. So this St. Louis dentist came up to Chicago, and I

said the only way you can have a congress is to go before the National Dental Association, get that association to adopt some resolutions, and present them to the Executive Council that was appointed by the Third International Dental Congress, which is going to hold a meeting in Stockholm, and if your reasons are good, I said, they will probably accept your proposition, and the congress will be held. I left this city on the 19th day of July for Europe, and was not present at the National Dental Association, but the St. Louis gentleman attended the National Dental Association, and a series of resolutions were adopted inviting the Executive Council to name St. Louis as the place for holding the Fourth International Dental Congress, and to fix the date for August, 1904. The resolution started out, "Whereas, The Louisiana Purchase Exposition, etc." and then it said that the National Dental Association resolves that it now invites the Executive Council, and it has appointed three commissioners, and it says in the enrolled and engrossed manuscript, which I have seen, that the said National Dental Association empowers and appoints Truman W. Brophy, Wm. C. Barrett, and Eugene H. Smith as commissioners, etc. I need not go into the particulars and the further wording of this invitation, which is signed by J. A. Libbey, President, and A. H. Peck, Secretary, of the National Dental Association. As soon as that was presented, the very first thing was an objection to the holding of the congress so early as 1904, on the part of one of the nine councilors present. He thought more time should elapse before holding the next congress. He did not think that enough new discoveries and inventions had been promulgated to warrant it, and was not certain whether his country would sanction it, if he should vote for it. And a representative of another country got up and said that he had not received any instructions, and that he was not prepared to say whether he could vote for any such proposition as that, and the resolution which I have just read stated that the decision should not take place later than 1903, and 1903 has not come yet, and other countries have not been allowed to put in an invitation for the holding of this congress. Perhaps England, Germany, Russia, Austria, or some other country might want the congress. And so, he said, it is taking an unfair advantage of these countries. He said this should be deferred until the meeting of the congress at

Madrid in 1903. Finally, I made a motion, and this matter was postponed from Wednesday until the following Monday. In the meantime the representatives of the different countries composing the Executive Council of nine said they would consult their countrymen who were present, and that if they found after such consultation it was their desire that this invitation should be accepted, then they would report favorably. The matter had been discussed more or less, and on Friday evening, when the American Dental Society of Europe adjourned, it adopted a resolution favoring the holding of the congress in St. Louis in 1904. It had not been acted upon yet, so the matter was put off until Monday, and it was finally decided, after considerable talk, to accept the invitation, but not unanimously, because the representatives of two countries were opposed to it. Then, in pursuance of the authority and powers that were conferred upon this Executive Council, it proceeded to name a committee of nine members, to collaborate in the organization of this congress, and in regard to the powers and duties of this committee of nine, I have here the translation of a letter that was written to Dr. Brophy. I know this translation is correct, because I have compared it myself. This letter is addressed to Dr. Brophy, who is chairman of the committee of nine appointed at Stockholm to organize this congress at St. Louis. The letter is as follows:

INTERNATIONAL DENTAL FEDERATION.
(I. D. F.)

OFFICE OF THE SECRETARY-GENERAL,
45 Rue de la Tour d'Auvergne.

Paris, October 8, 1902.

Sir, and Honored Colleague:

The exact decision taken by the Executive Council at the session in Stockholm is herewith addressed to you, and legally we can but abide by this decision.

We have forwarded a copy of that decision to the President of the National Dental Association through the medium of Dr. Aguilar who has carried at the same time our acceptance of the invitation which had been sent to us.

This decision has been taken on the motion of Dr. Harlan, and the Secretary has in his minutes the paper in which Dr. Harlan himself has written the text of his motion. At this moment, the powers of the Com-

mittee have not been defined beyond what is pointed out in Dr. Harlan's text.

The nine members nominated are enjoined to appoint a Committee which will take action for the organization of the Fourth International Dental Congress, and it is expressly mentioned that these nine members represent the Executive Council. We believe that you will first form the Committee by naming a President, a Vice-President, and a Secretary, then place yourselves in communication with the President of the National Dental Association, who has been advised on his side, and who has received from the hands of M. Aguilar the aforesaid text in the manner spoken of above; moreover, we write to him at the same time that we write to you in order that he may enter into communication with you.

Now, what is the object of this Committee, and what are its powers? In accordance with Resolution No. 13 made by the Congress at Paris in 1900, the Executive Council of the I. D. F. is informed to prepare the next International Dental Congress, and, in accordance with Resolution No. 14, it is commissioned to organize the Fourth International Dental Congress. The Committee of nine members, which represents this Executive Council, is then entrusted with this double mission, and officially, we can but abide by the decisions taken, and formally voted upon.

The present organizers of the Fourth Congress consequently ought to give to the Committee which we have named the powers necessary to accomplish its mission, and the place which is convenient to the representatives of the Executive Council of the I. D. F.

If this is thus concerning it, it is well; if not the Committee in question ought to advise, in a formal report, the President of the I. D. F., who, after having conferred with the Bureau of the Council, that is to say with the two Vice-Presidents, and the Secretary-General, will make known the opinion of the Bureau, if the Bureau believes it can remove the difficulty. If, on the contrary, the Bureau judges the question too important to render a decision itself, it will make a report at the next session of the Executive Council, which will meet at Madrid next April.

We write by the same mail to Dr. Aguilar in order that he may inform us concerning his reception by the President of the National Dental Association, and concerning the results of his trip in general.

Believe, Sir, and Honored Colleague, in our very cordial sentiments.

DR. CH. GODON,

The President.

DR. E. SAUVEZ,

The Secretary-General.

This never would have come up if it had not been for the precipitancy (I am using that word advisedly) of the Executive Council of the National Dental Association, urged by outside influences to go to work and appoint a committee of fifteen to organize the congress, without knowing whether the invitation had been accepted or not, and even before it had been presented, and just as soon as the Executive Council of the National Dental Association got together, it proceeded to name five of its own members out of

seven to be on this committee on organization! I have the names in my pocket, and they named ten more from different parts of the country, and the congress is to be held in St. Louis, and they put one man on from St. Louis out of fifteen, and three from the State of New York. As soon as Dr. Brophy got home, the first thing he hears is that he had better go slow; that he had better look out and see what kind of horses were let loose and commenced to kick, and all this without Dr. Brophy having said anything at all. He was told that he was probably exceeding his powers and province, and the Executive Council appointed by the last congress to form the next congress had exceeded its powers. You, gentlemen, if you rely on my translation of this document, can see whether it had exceeded its powers or not. It is expressly stated that the committee's duties and powers will not expire until the opening of the next congress. So it had a perfect right and the proper authority, which was constituted by the congress of twelve hundred and fifty members, to do the thing that these people are talking about.

Dr. Johnson, I thank you again for the opportunity to say what I have said about this matter, and I wish further to remark that the international idea will grow in spite of the little troubles that appear on the surface, because politicians die, or they lose their places and other people come in who, having better preparation for the duties and responsibilities of the position that they are appointed to fill, go ahead and do them regardless of anything and everybody, provided they are right. The first International Dental Congress ever held in the world got more help from this country than perhaps any other, and the backbone of it in America was this society. We have got to stand by them now. When the World's Columbian Dental Congress was held in Chicago, the backbone of it was the Odontological Society of Chicago, a little bit of a society, it is true, but every man was in earnest. I do not say they could have done everything without the assistance of other members of the profession in the States, but this society was behind it, and every foreigner who came to Chicago in any way as a visitor, or who passed through this city, was entertained by the members of the Odontological Society, and mostly collectively.

The congress of 1900, held in Paris, had a larger representation from the Odontological Society of Chicago than from any other society in the world, in comparison with the number of its

members. And still I do not ask that the Odontological Society should go into any controversy. I simply say this, that after a fair statement of the facts in the case, I believe that the members of this society will see that justice is done.

DR. E. J. PERRY:

This subject is a tremendous one. I have two emotions which fill my soul to-night, and they are emotions not unknown to me. I am filled with professional pride, and I am filled with patriotic pride. This European invasion which Dr. Harlan has so ably spoken of has broadened America, and I fancy I see Uncle Sam sitting at the international table, and acting perhaps as toastmaster. After the Spanish-American War we seemed to take on international manners and to be as a nation greater in the estimation of other nations of the world, and that fills me with patriotism and national pride, and now, when our own Dr. Brophy, ably assisted by Dr. Harlan and other American dentists, have promoted the International Dental Federation, I can but feel that our profession is keeping pace with our nation.

As Dr. Harlan has said, time is a great leveler, and the little differences will be fixed up. It will all be leveled down after awhile, and the right will prevail. The world as a whole is progressing, and we are progressing with it.

I am very glad Dr. Harlan has made these authoritative statements. At the dinner given to Dr. Aguilar, I asked Dr. Harlan for a statement early in the evening. He made an authoritative statement, and when he had finished we all knew where we were at. We knew why we were there to give a dinner to Dr. Aguilar. We felt the importance of it, and we were extending to him national courtesy. We felt we were giving him a courtesy for the entire profession of this country. It does us good to stop talking about inlays, fillings, treatments, the technique of our work, and talk on larger subjects, and mingle with those men who have the time, means and inclination to go abroad and bring back with them ideas, and while I have not been able to go myself, I am willing to stay here and uphold those who can go and do go.

DR. JOHNSON (closing the discussion):

The paper was not prepared with any idea of considering the subject specifically in reference to the coming international dental congress, but simply to point out the benefits of international rela-

tionship, the broadening of our conception from local or national to international. It seems to me that the subject is apropos at this time, on account of the fact that there is a tendency, not only in dentistry, but in all lines of active thought, for the nations of the earth to meet and confer upon all subjects of international importance. As an American dentist, I have sometimes been humiliated to hear such an unfortunate display of conceit as we sometimes hear when men are speaking about American dentistry. We should disabuse our minds of the idea that we have all of the good things in America, and that other countries have nothing that is good. I believe we can benefit ourselves much by studying the work of other nations and forming an international relationship, and it was simply to point to that that I read the paper.

OBITUARY.

Dr. HARRY HUBERT HERREN.

Died at Pasadena, Cal., November 27, 1902, from tuberculosis, Harry Hubert Herren, D. D. S., age, twenty-eight years.

Dr. Herren was born in Smith County, Kansas, March 20, 1874, and moved to Pasadena, Cal., in 1886. He went to Chicago in 1896, to begin the study of dentistry in the Chicago College of Dental Surgery, from which he graduated in 1899. He was associated with Dr. John S. Marshall, of Chicago, for two years. He moved to Los Angeles and took up the practice of his chosen profession, making a specialty of orthodontia, and was associated with the dental department of the University of Southern California for two years, as an instructor in that branch, when his health compelled him to resign. He was one of the most active members of the Los Angeles Association of Dental Alumni, and was elected its president in 1901. He was also a member of the Southern California Dental Association.

He was married in Chicago to Miss M. Victoria Ackerman, who survives him.

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EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

THE DENTAL REVIEW FOR 1903.

The present issue rounds out another year for the DENTAL REVIEW, and in looking back over the record made by this publication for the past twelve months, we are full of thankfulness. The journal has received the support of the profession in a way to constitute a bright outlook for the future. It requires several factors to make a dental journal truly successful, and in all of these essentials the DENTAL REVIEW is most fortunate. It needs time for an established prestige in any publication; it requires originality to make its pages interesting; it requires impartiality in the presentation of facts to the profession so that its position may be accepted as without bias; it must have the best of contributors to furnish the most advanced ideas; it must have publishers who are liberal, and who are willing to sacrifice money to keep it up to a high standard; it must contain matter in each issue of real practical value to the busy practitioner; it must have different departments to interest different classes of readers; it must have a wide circulation to carry a cumulative force to all sections of the country and to foreign countries; it, above all things, must have readers who take a vital and intimate interest in its contents and its policy, and who enter into the spirit of its aims with a deeper significance than the man who merely picks up the daily newspaper to find out what is happening. The relationship existing between a professional journal and its readers is of a vastly different character from that of other lines of journalism, and if a dental periodical fails to enlist the sympathy of its patrons, there is something lacking in its make-up.

In the various features just enumerated the DENTAL REVIEW stands prominently as a most successful journal. Its field of usefulness is widening every day, and it is the aim to make each

issue better than the preceding one. In line with this advancement we confidently look forward to the coming year as among the best the journal has ever had. We have already on hand much matter of great interest to the profession, and the promise of more of like character. In fact the prospects never looked brighter than they do to-day, and we enter upon the New Year with greater confidence than ever in our ability to please our readers. We extend to them, one and all, our thanks for past favors, and our promise to do for them the best that in us lies for the future.

THE EDITOR'S DESK.

THE MISTLETOE AND HOLLY.

I am sorry for the man or woman who ever gets too old to enter into the spirit of the blessed Yuletide season, or who sees nothing beautiful in the sentiment which yearly springs up in the hearts of people to bind them closer in a common sympathy. There is something about the Christmas time which appeals to the finer senses of humanity and makes it forget for a moment the sordid side of life and the otherwhile unconquerable greed of gain. And when this sentiment is summed up it will be found that aside from religious convictions, it revolves for the most part around two ideas—the idea of home and the idea of childhood. And what is better than these two ideas? Home is the most sacred place on earth, and childhood is the sweetest and purest thing in existence.

At Christmas time there is the universal home-coming on the part of the loved ones scattered here and there by the exigencies of modern life, and to gather once again around the old fireside and see reflected in the light of the glowing embers from the ancient Yule-log the faces of those best beloved is the sweetest sight this side the pearly gates.

And the children—who among us is not made better by the radiant faces of the blessed little tots as they hug close the bur-nished toys and chatter so confidently of their patron saint, the dear, immortal old Kriss Kringle? And who can escape the contagion of their happiness? Pity the man who is proof against

this sort of infection, and who can look unmoved upon such a scene as this. Let us get closer together at this time of the year, and let us cherish more and more the beautiful sentiment typified by the event. Let us try if we may to divorce Christmas from the modern idea of a scramble for presents, and let us exchange love for love, and charity for charity, instead of bartering so fervently in material commodities on this especial occasion. Let us go back to the sentiment of home and childhood, and renew the memories of other days when life was less complex and not so careworn as it is to-day. Let us be simple in our tastes and happy in their fulfillment. A Merry Christmas and a Happy New Year to all.

BIOGRAPHICAL SKETCH.

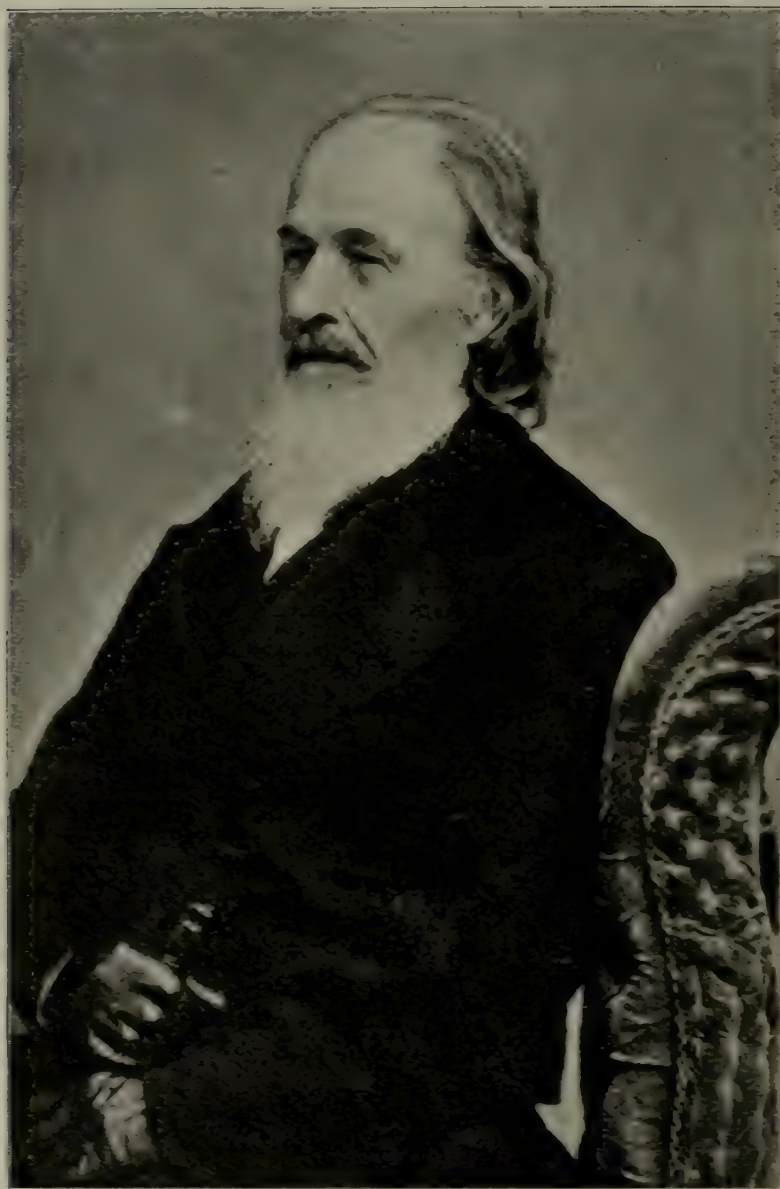
X.

SOLYMAN BROWN, A. M., D. D., M. D., D. D. S., CLASSICAL INSTRUCTOR—AUTHOR—SCULPTOR—MINISTER AND POET
LAUREATE OF THE DENTAL PROFESSION.

BY BURTON LEE THORPE, D. D. S., ST. LOUIS, MO.

Solyman Brown, son of Nathaniel and Thankful (Woodruff) Brown, was born at Litchfield, Connecticut, November 17, 1790, of puritan parentage. His early life was spent in his native village, where he was known as an earnest student and book-lover. In 1810 he entered Yale College to prepare himself for the ministry. He graduated from that institution in 1812, subsequently receiving the degree of Master of Arts. On Sept. 30, 1813, he became a Licentiate Doctor of Divinity, this degree being conferred on him by Litchfield North Association of the Congregational Church of Connecticut. For seven years he combined the duties of minister and teacher, but on account of a severe bronchial trouble, he, for a time, abandoned public speaking and devoted his time to classical instruction.

In 1822 he moved to New York City, where he was engaged as Professor of Languages in Madam Okil's Young Ladies' Academy. Here he met Miss Elizabeth Butler, daughter of Amos Butler, Esq., for many years editor and proprietor of "The New York Mercantile Advertiser," whom he married in 1834. About this time he embraced the doctrines of Emmanuel Swedenborg and was



SOLYMAN BROWN, A. M., D. D., M. D., D. D. S.

installed as regular preacher of the New Jerusalem Church of New York City. The first twenty-five years of his career were devoted to the ministry, writing and teaching, which he continued until 1832, when he became acquainted with Dr. Eleazar Parmly, who was at that time distinguished as a dentist. Being much of the same temperament—poetic and idealistic—they naturally affiliated and their friendship developed to the extent that Dr. Parmly invited Mr. Brown to become a member of his family and instructed him in his profession. Mr. Brown was quick to master the art, and soon became an enthusiast in his new calling, contributing many valuable and interesting articles to general and dental literature.

In 1818 he published at New Haven a volume containing "An Essay on American Poetry," together with several miscellaneous articles, which attracted much attention and criticism, he taking the ground that America could and would produce first-class poets immediately, in counterdistinction to the assertions of the Scottish reviewers that a new country could not furnish the material for a poet of the first rank. William Cullen Bryant, then at Yale, took the first prize in a thesis claiming the Scottish reviewers were right and Solyman Brown was wrong. Bryant lived to prove his thesis wrong by his own poetic genius and Dr. Brown lived to see Longfellow's bust in Westminster Abbey. He wrote a poem in five cantos in blank verse entitled "Dentologia, a poem on the diseases of the teeth and their proper remedies," with notes by his preceptor, Dr. E. Parmly, to whom the poem was dedicated, and who issued it in book form in 1833. This classical poem was a marked literary production, considering the subject, and was extensively quoted at the time and favorably commented on by the best critics and writers in the profession, and had a great influence in elevating dentistry as a profession. A portrait of a young lady, in verse, showing the value of the teeth to the human form divine, are quoted to show the beauty and technique of the poem:

"Behold Urilla, nature's favored child;—
Bright on her birth indulgent fortune smiled;—
Her honored grandsire, when the field was won,
By warring freemen, led by Washington,
Nobly sustained, on many a glorious day,
The fiercest fervors of the battle-fray;

Survived the strife, and saw at length unfurled
Our union-banner floating round the world;
Then found a grave, as every patriot can,
Inscribed 'Defender of the rights of man.'

"Her sire, whose freighted ships from every shore
Returned with wealth in unexhausted store,
Was doubly rich—his gold was less refined
Than the pure treasures of his noble mind.
And she herself is fair in form and face;—
Her glance is modesty, her motion grace,
Her smile, a moonbeam on the garden bower,
Her blush, a rainbow on the summer shower,
And she is gentler than the fearful fawn
That drinks the glittering dew drops of the lawn.

"When first I saw her eyes' celestial blue,
Her cheeks' vermilion, and the carmine hue,
That melted on her lips:—her auburn hair
That floated playful on the yielding air:
And then that neck within those graceful curls,
Molten from Cleopatra's liquid pearls;
I whispered to my heart—we'll fondly seek
The means, the hour, to hear the angel speak;
For sure such language from those lips must flow,
As none but pure and seraph natures know.

"'Twas said—'twas done—the fit occasion came,
As if to quench betimes the kindling flame
Of love and admiration—for she spoke,
And lo, the heavenly spell forever broke
The fancied angel vanished into air,
And left unfortunate Urilla there:
For when her parted lips disclosed to view,
Those ruined arches, veiled in ebon hue,
Where love had thought to feast the ravished sight
Or orient gems reflecting snowy light,
Hope, disappointed, silently retired,
Disgust triumphant came, and love expired!

"Let every fair one shun Urilla's fate,
And awake to action, ere it be too late;—
Let each successive day unfailing bring
The brush, the dentifrice, and, from the spring,
The cleansing flood—the labor will be small,
And blooming health will soon reward it all.
Or, if her past neglect preclude relief,
By gentle means like these; assuage her grief;
The dental art can remedy the ill,
Restore her hopes, and make her lovely still."

This poem was followed in 1838 by another in blank verse entitled "Dental Hygeia, a poem on the health and preservation of the teeth," dedicated to the author's brother, Dr. A. Woodruff Brown, a dentist, who published it in book form. It treated of the laws of health and was considered by many as equal or superior to "Dentologia." The most important contribution of Dr. Brown's was "A Treatise on Mechanical Dentistry," which originally appeared as a serial in the *American Journal of Dental Science* and was at the time the most practical work published in America. It was complete, well written and fully illustrated for that period. It called down on his head a great amount of criticism, because at that time it was regarded as having exposed secrets of the profession. It will be remembered by those familiar with the methods of that day, that most dentists regarded the knowledge in their profession as secret and were jealous of whomsoever might become a competitor; consequently most dental offices and laboratories were closed to visitors, so when Dr. Brown's book appeared he was harshly criticised for making public the things considered secret. Dr. Elisha Townsend, of Philadelphia, not so liberal minded in those days as he became later in life, wrote Dr. Brown that he "was a fool for giving away to the world the valuable secrets that it took years of hard labor to obtain." This work was later published in book form and also was republished in the first three chapters of F. Maury's "Treatise on the Dental Art," translated by J. B. Savier, 1843.

Frequent essays appeared in the *American Journal of Dental Science* from Dr. Brown's prolific pen; some of them are: "Of the Osseous Union of the Teeth," "Arsenic," "Remarks on Professional Morality," "Extraction of Teeth," "On the Pursuit of Professional Eminence," "Jaw Fractures," "The Necessity of Regulating the Natural Teeth," "Materials for Fillings," "Premature Dentition," and the reviews of numerous works on dentistry. During a period of sixty-five years Dr. Brown contributed to literary periodicals of his locality many hundred poems, some of which appear in a work called "The Poets of Connecticut." He was a frequent contributor to the "New York Mirror," and during the Rebellion, published a series of War Lyrics in William Cullen Bryant's "New York Evening Post." Dr. Brown was a charter member of The American Society of Dental Surgeons. At his house, No. 13 Park Place, the

society met and adopted its constitution and by-laws. He being the only classically educated man in the profession at that time, was chosen recording secretary, which office he held for five years. He was one of the committee appointed to draft the constitution and by-laws of the society on its organization. He and Chapin A. Harris were the principal promoters of the *American Journal of Dental Science*, the first issue appearing June 1, 1839. Drs. E. Parmly, Elisha Baker and Solyman Brown were the publishing committee. Its first editors were Dr. E. Parmly, of New York, and Dr. Chapin A. Harris, of Baltimore. Dr. Parmly retired after the first year and Dr. Brown succeeded him as coeditor with Dr. Harris. He became a regular contributor to the Journal's pages. About this time Dr. Brown was interested in a concerted effort for the elevation of his profession. He was associated with Hayden, Harris, Parmly and others in establishing a dental chair in a New York City medical college, and the failure to accomplish this resulted in the organization of the first dental college at Baltimore, 1840. It was at a meeting of prominent New York dentists that Dr. Brown suggested "Why not have an independent dental college?" This suggestion was seconded by Dr. Jahial Parmly and Dr. Harris, who returned to Baltimore, and with Doctors Hayden, Bond and Baxley founded the Baltimore College of Dental Surgery. This institution recognizing Dr. Brown's ability and professional worth conferred the honorary degree of Doctor of Dental Surgery on him February 10, 1842.

Dr. Brown is recognized as the inventor of many ingenious instruments and methods. In 1840 he introduced asbestos as a material for pulp capping. From 1853-4 he was editor of the "Semi-annual Dental Expositor," published in Baltimore, in which his "Treatise on Mechanical Dentistry" was published in full.

Dr. Brown practiced his profession in New York City about twenty-eight years. In 1844 on account of failing eyesight, he sold his practice to Dr. Charles C. Allen, and retired to join a Fourieristic Community, which at that time was very much lauded and fostered by his friend, Horace Greeley. But the Community had a short life. It was located in Leraysville, Northern Pennsylvania. When it broke up Dr. Brown had sustained great pecuniary loss and was in a dilemma. He had sold his practice and agreed not to return to it for a period of ten years, and thus he was deprived

of his former clientele and must seek his vocation in other fields. About that time he was associated with Dr. Miles of Ithaca and also practiced in Owego. Two years after that, in 1852, Dr. Brown returned to New York City, and had opened a dental depot for the sale of dental materials.

Dr. Brown became somewhat restive as a business manager, and; anxious to resume his dental practice, he obtained the consent of Dr. Allen to resume without violating the agreement. It was at that time he formed a partnership with Dr. Norman W. Kingsley and Dr. Samuel Lockwood. Dr. Lockwood took charge of the operating department, and the department of artificial work was assigned to Dr. Kingsley. Dr. Brown, to use his own language, said that he "should be occupied in the drawing room, receiving callers, and in the general management of the business." But Dr. Brown being then sixty-two years of age, hardly realized that in his absence his old clientele had drifted entirely from him. The arrangement was not exactly a prosperous one for either of the three partners, and so, at the end of the first year it was dissolved by mutual consent. Dr. Brown, in the meantime, had not given up his connection with Mr. Stockton, and so continued the oversight of that business for some little time; until in 1854, he, with Dr. C. S. Miles and Dr. J. M. Crowel, organized the New York Teeth Manufacturing Co., which went out of business during the Civil War. Dr. Brown then being more than seventy years of age retired to Danby, N. Y., and became pastor of the Swedenborgian Church at that place. Here he remained until 1874, when he removed to Dodge Center, Minnesota, where he lived at the residence of his son-in-law, Judge C. D. Tuthill, until he died, February 13, 1876, at the age of eighty-six. His mental faculties continued clear and vigorous until his last illness, which was very brief. He was buried with the honors of the Masonic order—the Knights Templars—of which he had been a member for sixty years.

Dr. Brown was a genial and charming gentleman, of a domestic nature. He had eight children, viz.: Solyman W., E. Columbia (Mrs. C. D. Tuthill), Augusta W., Edward G., E. Parmly, Flora B. (Mrs. Eugene Pugdry), Helen B. (Mrs. Charles Sandford), Mary V. (Mrs. Harry E. Blake). His wife and five daughters and one son survive him. This son is Dr. E. Parmly Brown, of New York City. One of his grandsons, L. Parmly Brown, graduated in

dentistry at the same college which conferred degrees upon his father and grandfather, this being the first, and probably still the only instance, where the D. D. S. degree has descended to three generations.

Dr. Brown was a man of refinement, very painstaking, and artistic in everything he undertook. He painted in oil and modeled in clay, and his dental work was of the first order. Especially is this so regarding his gold fillings, and his efforts in the manufacture of mineral teeth. When Dr. Norman W. Kingsley began practice in 1850 he lived in the house where Dr. Brown formerly boarded. In the parlor was a portrait bust in plaster modeled by Dr. Brown. Dr. Kingsley at that time had the most exalted idea of one capable of making a portrait in marble or its equivalent, and when told it was made by Dr. Brown, a dentist, it excited his ambition to emulate his example and was an incentive to him to pursue that line of work; in which, during the years that have followed, he has become famous as an expert in modeling and carving.

Dr. Brown took a leading part in the three great events that lifted dentistry from a craft to a profession, i. e., the organization of the first dental college; first dental journal and first dental society, and did a great deal more for dentistry than he has been credited with. He was a useful and ornamental member of the profession and did much to enhance our worth in the estimation of the laity.

The facts contained in this sketch have been obtained from:

Dr. E. Parmly Brown, New York, son of the subject of this sketch.

Dr. Norman W. Kingsley, New York.

Dr. Solyman Brown's poem "Dentologia"—Peabody & Co., N. Y., 1833.

F. Maury's "Treatise on the Dental Art." Translated by J. B. Savier, D. D. S. Lea & Blanchard, Philadelphia, 1843.

"Poets of Connecticut, with biographical sketches," edited by Rev. Charles W. Everett, Hartford, 1843—p. 187.

DOMESTIC CORRESPONDENCE.

EDITOR DENTAL REVIEW:

Will you kindly allow me space to say a word in connection with the letters in the October number from Drs. Bentley and MacDowell, commenting upon my criticisms of Dr. MacDowell's

book and Dr. Bentley's review of it. I wish to disclaim any personal feeling whatever in the matter. I am entirely unacquainted with Dr. MacDowell, and but slightly acquainted with Dr. Bentley, and would have absolutely no reason for a personal attack upon either gentleman. Whatever severe things I had to say in my criticism were said because I felt they were warranted by the facts, and were necessary to the progress of orthodontia, and upon the correctness of these statements I must be judged. If the book is poorly written, contains inexcusable grammatical mistakes and incorrect representations of facts, and should have been severely criticised instead of being favorably reviewed, then I am correct; but if it is well written, contains valuable original ideas or better statements of old ones, if credit is given where credit is due, if the mistakes it contains can be charged up to the printer, then I am incorrect, and my criticism should justly be classed as hysterical, unwarranted, and beneath the dignity of scientific discussion.

Very truly yours,

WILLIAM J. BRADY.

IOWA CITY, IOWA, Nov. 24, 1902.

THE LAST OF A FAMILY OF DENTISTS GONE.

TO THE EDITOR OF THE REVIEW:

"Dr. Jarus Searle Hurlbut, of Springfield, Mass., one of the best known dentists in the country and president of the American Association of Dental Examiners, died yesterday of apoplexy."

Dr. Hurlbut's demise closes the list of five brothers who turned their attention to dentistry. All were natives of Springfield.

Dr. Hurlbut has been a most familiar personality, particularly in New England. He was in no sense an aggressive practitioner but, as he once said to the writer, "I let you go-ahead fellows make the experiments, and then use the results if good." He enjoyed a reputable position, and had a lucrative following for an inland city.

His position as examiner on the Massachusetts Board made him well known among the practitioners of his State. At a party

of dentists lately it was said that out of forty patriarchs given a banquet twelve years ago, only two were living. "The fathers, where are they?" Only three Springfield dentists of the older type remain, viz.: Drs. Derby, Morgan, and Stockwell, with the frosts of winters on their brows. Fifty years this October we left Springfield to commence the practice of dentistry. As we turn and look about, we truly exclaim, "The fathers, where are they?", Echo answers, "Where?"

G. ALDEN MILLS.

NEW YORK CITY.

Dec. 5, 1902.

A CORRECTION.

TO THE EDITOR OF THE DENTAL REVIEW.

My Dear Sir:—In the November issue of THE DENTAL REVIEW, on page 957, in the account of the discussion of a paper by Mr. Robt. Brewster, on "The Advantages of High over Low Fusing Porcelain," I am reported to have said "Dr. Ottolengui made some statements in his paper which, to any one who has had any experience in porcelain, were, to say the least, ridiculous. He stated that shrinkage in low fusing body was less than in high fusing body." This is an error and is due to the fact that my corrected copy of my discussion having failed by accident to reach you, the stenographer's account, which was incorrect, was published. What I did say was "The advocates of low fusing porcelain have made some statements which to any one who has had any experience in porcelain are, to say the least, ridiculous. Some have stated that it was of greater structural strength and shrunk less than the high fusing porcelain. This can be refuted by clinical experience and laboratory test. Recently Dr. Ottolengui in a paper stated that he could fit gold matrices into cavities, into which platinum matrices could not be fitted. This surprises me, and I dispute it, for I believe I can fit a platinum matrix into any cavity into which he can fit a gold matrix—you will note I did not say *burnish* but *fit*." Otherwise the reported discussion is correct.

I regret exceedingly that I have been reported as attributing to Dr. Ottolengui statements he has not made and as characterizing his statements as "ridiculous." He has never to my knowledge done such a thing, nor do I ever expect him to. My esteem

for him, his learning and his skill, leads me to request you to publish this correction.

Very truly yours,

J. E. NYMAN.

[It is true as Dr. Nyman says that the report printed in THE DENTAL REVIEW was the one sent to the editor by the stenographer. In all such reports duplicates are forwarded to the authors with the request to make corrections and send to the editor. If no such corrected copy is received by the editor, it is taken for granted that the stenographer's report is correct and it is so printed. In this case through an oversight the corrected copy did not reach the editor, hence the mistake.—EDITOR.]

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The DENTAL REVIEW, 55 State St., Chicago, Ill.]

To Make Plugger Points.—To serrate a plugger point drive the point to be serrated (which must be softened by annealing) against the well serrated surface of some finished plugger. The serrations will be reproduced on the soft metal which may then be bent to shape and tempered. F. W. STEPHAN, Chicago.

To Cut Out Fissures in Molars.—When necessary to cut out the lingual fissure in upper molars especially, and often in cutting other fissures which extend to the buccal surface, the knife edge corundum or carborundum stone will be found to be the quickest and easiest method to accomplish the purpose.

F. W. STEPHAN, Chicago.

Adrenalin Chloride.—My pleasant experience with the comparatively new hemostatic (adrenalin chloride $\frac{1}{1000}$ solution), leads

me to recommend this powerful vasoconstrictor for arresting hemorrhages after pulp extirpation. It forms no blood clot, is non-poisonous and nonirritating. To obtain best results it must be used freely and persistently. F. P. CRONKITE, St. Joseph, Mo.

Removing Crystallized Calcium Sulphate from Rubber Dentures.—To remove the calcium sulphate which adheres to the inner surface of vulcanite plates after vulcanization, especially where the ridge is narrow in a lower case, or the rugæ deep in an upper, making these surfaces hard to clean and polish, the deposit can be removed by placing the plate in a strong solution of HCl. for a short time. Then by using a cup shaped brush wheel carrying pumice and oil it may be made clean and smooth.

J. A. BULLARD, Chicago.

Tinct. Calendula.—This remedy is new to many practitioners but it fills a very important place in the treatment of lacerated gums from any cause. It is found beneficial if applied after using the clamp or polishing strips between the teeth, and after fitting bands or adjusting crowns or bridges. It may also be used with benefit in ulcerated patches, and as a stimulating application in bleeding, flabby conditions of the gums. It can be freely used and is preferred in most cases to the stronger counterirritants so commonly used in these conditions.

W. H. HERSH, Chicago.

Method of Filling Tortuous Root Canals.—Prepare brass wire thirty-six gauge, by drawing it around a smooth excavator handle several times to stiffen it. Cut the wire in suitable lengths and taper them to desired shape with a fine file when wanted. The wire can be held conveniently in a broach holder. Work the canal full of chloro-percha with a smooth broach and then insert the brass point, passing it into the canal as far as possible. Remove the broach holder and with a small, sharp chisel cut the excess wire off. This method should not be adopted in filling large canals as there is danger of forcing the wire through the apical foramen.

C. J. HADLEY, Chicago.

Solution for Gold Plating.—Cyanide potash, two oz.; distilled water, eight oz. Mix well and add fifteen grs. chloride gold. This solution should be used at a temperature of about 140° F. Two cells of a dry cell battery are connected and to positive end attach a small bar of twenty or twenty-two carat gold, (sixteen g. gold wire one inch long). To negative end attach the article to be plated and immerse in solution, the gold bar on the positive end being immersed just deep enough so that it will not touch connecting wire. This solution will last indefinitely and can be made without the chloride of gold, but it takes longer to plate and the result is not so permanent.

W. A. ROTHSCILD, Madison, So. Dak.

Partial Lower Plates.—When making a partial lower plate for a case where few if any of the posterior teeth remain, that portion of the plate which passes on the lingual sides of the incisors should not come in contact with the teeth at all. It should be made to rest below the margin of the gum and kept away from the cuspids also, as much as the case will admit. The alveolar ridge upon which the plate rests on either side, is gradually absorbed away allowing the plate to settle and if it is made to come in contact with the anterior teeth, will force the gum away from them and this always results more or less disastrously. There is also a tendency to decay of natural teeth where a partial plate is made to rest against them.

H. A. CROSS, Chicago.

Utilizing Worn-out Inverted Cone Burs.—Worn-out inverted cone burs can be converted into drills by grinding them flat on two opposite sides so as to bring the flattened surfaces together in a cutting edge with a carborundum wheel in the lathe. Such drills are invaluable in opening up cavities, grooves and fissures in the extension of cavity outline, and in cutting out defective fillings. A number of these drills may be kept in the bur case and when in use can be easily reground with a small carborundum wheel mounted on a mandrel attached to the shaft at pulley end of engine, not interfering with the bur cleaning brush wheel. Other uses to which a wheel mounted in this way may be put will suggest themselves.

J. F. F. WALTZ, Decatur, Ill.

Method in Inlay Work.—After platinum foil is burnished into the cavity, take a piece of gutta-percha a trifle larger than space in cavity, soften and pack into cup, the excess flowing out and over margins. This can be burnished against cavity margins with no danger of tearing platinum margins. As soon as gutta-percha is hard the platinum can be removed without danger of springing. Invest in any standard investment and after the investment has set, the gutta-percha can be removed by the use of hot air. If the platinum at the bottom of the cavity has been torn no harm is done as the gutta-percha fills out the cavity wall, and the investment makes the outline for last platinum over which any of the high fusing porcelains will flow and bake in form. Since adapting this method I have not had one case of springing or warping, and have had perfect adaptation of both filling and margin. N. L. BURKE, Benton Harbor, Mich.

Tube Crowns.—In those cases of repair or replacement wherein the original crown has been broken away leaving the end of the dowel projecting slightly, and yet still secure in its attachment to the root, a well adapted crown may often be made without removing the dowel, which is sometimes difficult and often dangerous.

In the procedure the end of the dowel should be squared up and a tube made to fit it. This may be made of platinum foil about No. 40 or 60, or of pure gold about thirty-six gauge, and the joint should be soldered and the tube well reinforced in either instance.

If the crown is to be constructed with gold, a base of pure gold of the same gauge should be then perforated and adapted to the root and soldered to the tube, and the open end of the latter closed with a small disk of plate at the same time. Where it is desirable to construct the crown of porcelain both tube and disk should of course be made of platinum, and the soldering and reinforcing should be done with twenty-five per cent platinum solder.

The crown may be then completed on this base in the usual manner, and in accordance with the requirements of either style of construction, when it may be mounted with cement.

Where the dowel is too short to afford sufficient integrity in

the attachment of such a crown, a greater degree of strength may be secured by slightly trephining its projecting end, and extending the tube into the root. No originality, however, is claimed in these suggestions.

HART J. GOSLEE, Chicago.

MEMORANDA.

The Success Company, of New York, warn the profession against an individual who is visiting dentists and physicians taking subscriptions for their magazine without authority.

SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

The fifth annual meeting of the Southern California Dental Association was held at Riverside, Cal., October 20 and 21. The following officers were elected: President, Dr. J. W. White, Los Angeles; first vice-president, Dr. C. S. Lane, Santa Barbara; second vice-president, Dr. J. W. Neblett, Riverside; treasurer, Dr. A. T. Covert, Long Beach; secretary, Dr. Lewis E. Ford, 307 South Broadway, Los Angeles.

M'LEAN COUNTY DENTAL SOCIETY.

A promising dental society has been organized in this county. Monthly meetings will be held, at which dental topics will be discussed. The following is the list of officers: President, F. H. McIntosh, D. D. S.; vice-president, J. H. Campbell, D. D. S.; secretary, B. M. Van Dervoort, D. D. S.; treasurer, D. M. Field, D. D. S. Executive committee: G. D. Sitherwood, D. D. S., J. S. Reece, D. D. S., O. J. Jarrett, D. D. S. Board of censors: J. W. Crigler, D. D. S., J. B. Brown, D. D. S., J. M. Gallahugh, D. D. S.

THE AMERICAN SOCIETY OF ORTHODONTISTS.

At the second annual meeting of the American Society of Orthodontists held in Philadelphia, October 8, 9, 10, the following officers were elected: President, Milton T. Watson, D. D. S., Detroit, Mich.; vice-president, Lloyd S. Lourie, D. D. S., Chicago, Ill.; secretary, Anna Hopkins, D. D. S., St. Louis, Mo. Board of censors: Richard Summa, D. D. S., St. Louis, Mo.; H. E. Lindas, D. D. S., Larned, Kan.; F. M. Casto, D. D. S., Columbus, Ohio. Committee on history and invention: E. A. Bogue, M. D., D. D. S., New York, N. Y.; W. J. Brady, D. D. S., Iowa City, Iowa; Lloyd S. Lourie, D. D. S., Chicago, Ill.

A CORRECTION.

NEW YORK, Nov. 18, 1902.

TO THE REVIEW:

I see that Dr. Cross says *his* method of cutting "dove tails" for filling in incisors is *original*. We have made hundreds of such operations as far back as '70. We recall distinctly that Dr. Geo. Parmalee, of Hartford, Conn., solicited

our services for this class of operations in either '70 or '71, knowing that we had advocated them.

I do not know for a certainty whether I was the inventor or not. No matter.

Yours cordially,

DR. G. ALDEN MILLS.

CORRECTION.

TO THE EDITOR OF THE DENTAL REVIEW.

Sir: In the report of the meeting of the American Dental Society of Europe at Stockholm, on page 936 of your valued journal, published November 15, 1902, I am made to say, by inference, that I never put crowns upon roots which have previously been filled with gutta-percha. What I did say was, that I had found it unsafe under such circumstances to undertake *immediate* crowning, antiseptic treatment being invariably indicated in such cases; whereas, with roots which had been properly filled with oxychloride of zinc, immediate crowning could be undertaken with impunity.

In the clash of tongues which occurred at Stockholm, it is no wonder if the stenographer should now and then have failed to catch the exact meaning of each speaker.

I am, sir, yours very sincerely,

N. S. JENKINS.

DRESDEN, Nov. 28, 1902.

INSTITUTE OF DENTAL PEDAGOGICS.

The tenth annual meeting of the Institute of Dental Pedagogics will be held in Chicago, December 29, 30, 31, at the Palmer House.

All who are interested in dental education are cordially invited to attend. The following program has been arranged. Papers: "The Systematic Arrangement of Lectures on Operative Dentistry," Dr. C. N. Johnson; "Teaching General Anatomy to Dental Students," Dr. Borland; "Teaching Electricity and Its Dental Uses," Dr. W. A. Price; "Teaching Embryology," Dr. I. N. Broomell; "Teaching Applied Physics," Dr. G. V. Black; "Physical Diagnosis;" a symposium on the "Management of the Teaching of Demonstrators in the Infirmary"—by four professors.

Report of committee on "Four-Year Curriculum."

Report of committee on "Nomenclature."

All new teaching appliances must be submitted to Dr. Whitslar, of Cleveland, or to Dr. Patterson, of Kansas City.

HART J. GOSLEE, *Pres.*

W. EARL WILLMOTT, *Chairman of Exec. Board.*

H. B. TILESTON, *Secy. and Treas.*

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

The Pennsylvania Association of Dental Surgeons held its fifty-sixth annual meeting on the evening of October 14, 1902, at the Continental Hotel, Philadelphia. The following officers were elected to serve during the ensuing year: President, Dr. Wilbur F. Litch; vice-president, Dr. Geo. W. Cupit; secretary Dr. J. Clarence Salvas; treasurer and librarian, Dr. Wm. H. Trueman.

During the past year the following papers were read and discussed before the society: "Combination Fillings," by Dr. Joseph Head; "Obtundents," by Dr. Chas. S. Moore; "The Difference in Method of High and Low Fusing Porcelain for Filling Teeth," by Dr. W. A. Capon; "A Practical View of the Plastics" by Dr. J. Clarence Salvas; "Alveolar Abscess, its Complications and Treatment," by Dr. J. F. Wessels; "The Danger of Infection of the Eye of the Dentist while Operating," by Wendal Reber, M. D.; "The Calcification of the Dentine and Enamel and its Relation to Hypersensitiveness of These Tissues," by Dr. I. N. Broomell; "Adenoids and Their Relation to Oral Deformity," by Dr. M. I. Schamberg; "A Sketch of Edward Hudson," by Dr. Wm. H. Trueman; "General and Local Anesthesia with Special Reference to its Application in Operations Within the Mouth," by Dr. E. Quin Thornton, M. D.

J. CLARENCE SALVAS,
Secretary.

RECENT PATENTS OF INTEREST TO DENTISTS.

- 711,052. Top for tooth powder bottles or cans or other containers, Henry B. Kent, New Brunswick, N. J.
- 711,324. Artificial denture, Wm. P. Lacy, South Boston, Va.
- 711,340. Dental mandrel, George J. Paynter, Philadelphia, Pa.
- 711,075. Toothbrush, Frederic T. Rench, Laporte, Ind.
- 711,827. Electric heater for dental purposes, Julius Cook and J. M. Pummerille, Michigan City, Ind.
- 712,057. Dentist's electrical annealing furnace, Nathan K. Garhart, Indianapolis, Ind.
- 712,648. Tooth crown, Charles P. Callaway, Glen Jean, W. Va.
- 712,526. Dental filling tool, Perry C. Hammersmith, Buffalo, N. Y.
- 712,813. Dental plugger, Frederick W. Korb, Cleveland, Ohio.
- 712,576. Dental instrument, John F. O. McMath, Oakland, Cal.
- 712,701. Hot Water Obtundent Handpiece, Alvin F. Merriman, Jr., Oakland, Cal.
- 712,705. Porcelain facing for crown and bridge work, Wm. H. Mosley and H. G. Robb, Midland, Canada.
- 712,716. Dental engine, Oscar H. and A. F. Pieper, Rochester, N. Y.
- 713,040. Dental bridge work, Emory L. Townsend, Los Angeles, Cal.
- 713,041. Dental band fitting instrument, Emory L. Townsend, Los Angeles, Cal.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

COCAINE IN PULP ANESTHESIA.

BY F. W. STEPHAN, D. D. S., CHICAGO, ILL.

Reading an article on the use of cocaine leads me to give a method for its use in the extirpation of the pulp which has been very successful in my hands, and which I have not seen described.

In the use of cocaine it is of prime importance to keep the drug under perfect control, to know just where it is going. I do not think any one will say that cocaine is dangerous when used on a pulp of a tooth, but we have plenty of evidence of its danger when used in any other way. It is especially dangerous when allowed to reach the stomach, as then it is very rapidly absorbed and the effect seems to simulate shock.

For that reason not only should the rubber dam be used, but the cocaine should never be allowed to spread itself over an indefinite area, between the teeth, etc. I have had toxic symptoms from a mere trace of the drug touching the tongue. What would have happened in these cases had it been injected we can only surmise.

However, in application to pulps I only use it in such cases where I am sure I can remove every vestige of the pulp by mechanical means. We must remember that we are not devitalizing, but anesthetizing.

The method of application is as follows: The pulp should be exposed, be the opening ever so small. Under the circumstances there is always some moisture present, a weeping of serum from the pulp if not some hemorrhage. This, if profuse, should be wiped out of the cavity until it can be controlled and just covers the pulp. At this point of exposure place a few very small crystals of cocaine. These can easily be carried to place by a broach or explorer which has been dipped into water to moisten the surface and then touched to the powder.

The crystals very quickly form a solution with this blood serum, which is the most readily absorbed substance I know of. In this condition the cocaine is easily and surely confined to the pulp chamber, and on pressure by soft rubber compress is quickly absorbed into the tissue, and as quickly anesthetizes it.

At this stage the pulp chamber should be thoroughly opened to gain perfect access to the canals. The pulp should then be promptly removed, the operator being heroic in reaching the end of the root to remove every particle of tissue in one piece. To leave a bit of living pulp at the end of the canal or in a very fine canal would be very embarrassing, and I can hardly imagine a more trying condition than to leave a broken broach in living pulp tissue. I have had to deal with both these conditions in my experience as a demonstrator in college. To avoid these embarrassments it is necessary to gain complete direct access to all canals before any attempt at removal is made. This can be done after anesthetization and I cannot too strongly emphasize its importance.

To sum up, to use cocaine for this purpose successfully requires the greatest mechanical skill, care and patience. Make the solution with serum from pulp itself, use very little cocaine, open the tooth thoroughly to gain access to the canal and be sure you get the pulp when you go for it.

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